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## **The Subtle Inequalities of Copyright**

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Editor :  
SUTINDER SINGH

# The Subtle Inequalities of Copyright

Philip G. Altbach\*

Copyright is well entrenched in international publishing, and yet it faces significant challenges. On the surface, copyright has never been stronger. The concept is increasingly accepted worldwide, and even those Third World countries, such as India, that argued against the inequalities of the international copyright system in the 1960s have largely ceased their carping. Even China is poised to join the international copyright system. While piracy has not ended, it has gone underground in all but a few countries. Massive pressure from the United States and Britain has brought such former pirates as Korea, Taiwan, and Singapore into the fold. Perhaps most important, the concept of copyright is almost universally accepted by governments and by those involved in the book trade worldwide.

Copyright has been strengthened by strong governmental pressure from the major publishing countries and from the legal systems in these countries. Copyright has been seen as much as a means of protecting trade advantages as it has as a basic concept of knowledge distribution. The United States and Britain have been concerned about the loss of 'knowledge products' of all kinds (of which books are only a very minor part) because these losses contribute to ever-growing negative trade balances. Further, the courts have been increasingly zealous in their protection of copyright and the prerogatives of the owners of knowledge products. For example, in the United States, the courts have narrowly construed copyright regulations in favour of publishers and against those who have claimed 'fair use' in reproducing materials for academic purposes. These rulings have significantly increased the power of copyright owners.

Yet, all is not secure in this era of narrowly construed copyright. Perhaps the greatest challenge to traditional copyright is technology. Every new technological advance brings a flurry of litigation and efforts by copyright owners to limit access to new technologies until their rights can be fully protected. The most recent example of this was the fight over the new digital audio tape (DAT) technology. The widespread dissemination of DAT was held up for several years while the producers of DAT machines and the owners of copyright (mainly the recording companies) struggled over how to ensure that copyright owners would be protected. Photocopiers have posed a continuing challenge to copyright owners and, while the courts have consistently ruled in favour of the publishers, the battle lines are forever changing as new and more sophisticated reprographic technologies are introduced. Data networks are also a new area of contention for copyright holders. How can knowledge products be controlled in an era of instantaneous communication through computer-based networks?

It is significant that these battles are over technological innovations.

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The debate over copyright principles raged in the 1960s and 1970s over issues relating to the appropriateness of control over knowledge and what responsibilities the rich countries had to help build up the educational and scientific systems of the newly developing nations of the Third World. Few argued for the abolition of copyright but many felt that knowledge should be shared more freely and that the industrialized nations, in part because of their earlier colonial domination of the Third World, had special responsibility to assist in the process of development. Some charged the industrialized countries with purposely maintaining tight control over knowledge products in order to keep the Third World in a dependent relationship and to maximize profits. In the ideologically charged Cold War era, charges of neocolonialism were leveled against the major Western countries, and many argued that Western policies were aimed at continuing domination rather than assistance. UNESCO, through its advocacy of a 'new world information order,' weighed in on the side of the Third World critics, enraging Western governments and contributing to the withdrawal of the United States and Britain from the organization.

It was said, for example, that Western publishers preferred to export relatively small numbers of books to the Third World rather than grant reprint rights because more profits could be obtained from direct exports. Some claimed that the foreign aid programs of such countries as France, Britain and the United States were aimed at exporting books and ideas rather than at encouraging indigenous development in Third World countries.

The vociferousness of the debates has abated, but the issues remain important. Most realized that the issues were not mainly ideological in nature and are highly complex. India, one of the main critics of the traditional copyright system, found itself emerging as a major producer of books and, not wanting to harm its future export markets, shifted its posture on copyright issues. Most realized that anarchy in the knowledge business would serve no one's long-term interests and that a workable copyright system is necessary and international cooperation a good idea. With the slow winding down of the cold war, most realized the slogans could not change reality. Countries that stood outside the copyright system, including the Soviet Union and China, slowly joined it.

Yet, it is important to realize that the international knowledge system is highly unequal, and it can be

argued that those who are in control of the system — and specifically copyright arrangements — have a special responsibility to assist in the intellectual and educational development of the Third World. I have held that there is a kind of OPEC of knowledge in which a few rich nations and a small number of multinational publishers have a great deal of control over how and where books are published, the prices of printed materials, and the nature of international exchange of knowledge. (Philip G. Altbach. *Third World Publishers and the International Knowledge System Logos* 2 (No. 3, 1991): 122-126). These same forces tend to dominate the new information and knowledge dissemination technologies. Because the knowledge infrastructures are located in these countries, there is a kind of monopoly that has been difficult to break. And because knowledge is not a finite natural resource but is infinitely expandable, there is the possibility of more countries becoming members of the cartel. There has, in fact, been relatively little expansion in the number of knowledge producing countries — and the price of entry into the cartel increases as the cost and complexity of knowledge production goes up.

Copyright, from its beginnings in England in the sixteenth century, has been a means of protecting the "haves" — of limiting access to books and information in order to maintain order and discipline in the trade — of creating a monopoly over knowledge. There are, of course, very good arguments in favour of copyright. These include the principle that those who create and disseminate knowledge and knowledge products should economically benefit from these creations and that the creator should maintain some basic control over the creation. Also inherent in the idea of copyright is that intellectual creativity should also benefit society—this is indeed the underpinning of copyright as expressed in the American Constitution.

### **The Responsibility of Copyright**

Along with power, and copyright bestows considerable power on the copyright holder, comes responsibility. For the most part, those who hold most of the world's copyrights and who also control the international copyright system have been largely concerned with power—with maintaining control over their copyrights and with maximizing their economic benefits. Copyright is seen in purely legal and economic terms. There is virtually no recognition that there are inherent noneconomic factors involved in copyright and that those who hold power now have a responsibility to assist those who do not have access to the



world's knowledge. Copyright, after all, is a moral and ideological concept as well as a legal and economic one. There is no recognition that the legacy of colonialism and the power of the multinationals has, to a significant extent, created the current highly unequal world knowledge system. It is, of course, much easier for the "haves" to cling to the economic and legal underpinnings of a system that has given them a virtual monopoly over the world's knowledge products than to recognize that we live in an interdependent world and that the Third World desperately needs access to knowledge and technology. In the current context, it is unlikely that those who need access to knowledge most will be able to obtain it "at current market rates" any time soon. What is needed now is *affirmative action* to ensure that books and other knowledge products are not kept from Third World nations because of the restrictions of the copyright system. Copyright holders must now spend as much time thinking about the needs of Third World readers as they do about maintaining market share. In the broader scheme of things, providing the assistance that is needed to the Third World will not cost very much. Indeed, in terms of copyright, what is needed is largely access to permissions, rights, and a very small amount of market share.

A necessary first step is increased consciousness of the complex issues relating to the world's knowledge system and the role of copyright in it and a recognition that a broader perspective is needed. A modest amount of economic sacrifice may also be required along with some inconvenience. Copyright must not be seen in isolation from issues of access to knowledge, the needs of Third World nations and the broad history of colonialism and exploitation. It is not productive to point fingers or assess blame for past inequities. Rather, we must quickly move toward copyright arrangements that will maintain the copyright system while at the same time permit flexibility so that the needs of the "have nots" can be met.

The needs are indeed great—and they are not limited to the poor countries of the developing world. For example, Moscow's famed Lenin Library is no longer purchasing any scientific journals from the West because there is no allocation of 'hard currency' funds. Few, if any, other libraries or academic institutions in the former Soviet Union are able to obtain access to key books and journals in the current circumstances. The situation is even more desperate for many sub-Saharan African countries, where purchases of books and journals from abroad ceased several years ago

because of lack of funds. Some countries lack the facilities to produce many kinds of books and must rely on supplies from abroad. These countries, and the number is depressingly long, are probably in more desperate need now than a decade ago. The end of conflicts in such countries as Cambodia, Laos, Uganda, Angola, Ethiopia, and others has permitted them to turn their attention to the rebuilding of educational and library systems — and there is a desperate need for books of all kinds as well as for the equipment and expertise to build up indigenous publishing capacity. Economic crisis throughout Africa has created special needs — exacerbated in some ways by the emergence of fledgling democratic regimes in some countries that must improve the lives of their citizens if they are to survive. Books are a small but highly visible way of making such improvements. Further, access to knowledge may help to build up a commitment to democratic ideals. Countries in the former Soviet Bloc, from Mongolia and Vietnam to Czechoslovakia and Bulgaria, need speedy access to the world's knowledge, having been cut off from much of it for almost a half-century.

The specific needs vary greatly. In some cases, access to scientific journals and books at subsidized prices for a limited period would help greatly. In others, local publishers with limited markets need easy and inexpensive access to foreign books in order to translate them into the local language. In a different context, permission to reprint books from the industrialized countries in the original language is needed to serve an indigenous population literate in English or French but unable to pay the high cost of imported books. And for some countries, most of the elements of an indigenous publishing industry are missing and there is a need to build it up from scratch. Copyright may not be the key element in all of these circumstances, but it does play a role.

Responsible world citizenship with regard to copyright is unlikely to be extraordinarily costly. Countries and publishers that require special assistance on copyright issues are unlikely to be major customers in any case — markets tend to be small and purchasing power very limited. Yet, there will be some costs involved. Export sales may be modestly reduced and income from the sale of rights foregone or limited. There may also be some administrative costs for industrialized country publishers. But the long-term benefits might well outweigh the immediate costs and inconvenience. A self-sufficient book industry in a Third World country is likely to be a better partner,

and in the long term a better customer as well, than would a weak and demoralized publishing community. Further, as the Indian case has shown, self-sufficient publishers tend to be supporters of copyright because they see adherence to copyright in their best interest.

It may be worth recalling that copyright compliance comes naturally with economic and social development. One of the most egregious violators of copyright in the nineteenth century was the United States, which felt, probably incorrectly, that it could build up its domestic publishing industry most effectively by freely reprinting works from abroad while protecting the rights of domestic authors. Once American publishing was well developed, the United States became a defender of copyright. Until the 1960s, the Soviet Union had a similar perspective — international copyright was violated as the country used knowledge from abroad for its own purposes. China has had a similar perspective up to the 1990s and is only now slowly joining the international copyright system. Nations must see copyright as in their best national interests before and then become fully supportive of it.

### What Can Be Done?

There are a number of steps that can be taken to help developing countries gain access to the world's knowledge and also build up their own indigenous publishing industries. None require a violation of the basic principles of copyright and, in the long run, will strengthen it because more countries will see it in their best interest to support copyright.

The idea of compulsory licensing — providing to Third World countries the automatic right under some very limited circumstances to reprint or translate Western books with the payment of reduced fees — was pressed by Third World representatives at international copyright meetings but never formally ratified by the major international treaties. The concept is a sound one so long as it is kept within carefully limited guidelines. Compulsory licensing would permit Third World publishers quick access to relevant educational and scientific materials by permitting them to reprint or translate materials for educational and a few other uses. The Third World publisher would be required to inform the copyright holder and provide some payment — often at below-market rates. This arrangement removes much of the bureaucracy from the system and also permits Third World readers to have access to knowledge from abroad fairly quickly. One of the common complaints from Third World publishers is that many Western publishers simply do not respond to requests for reprint or translation rights.

Charging fees that are clearly beyond the ability of Third World publishers to pay is another common problem. Compulsory licensing would help to ameliorate this problem.

In the past decade, the copyright "powers" have used every means available to ensure strict compliance with both the spirit and the letter of international copyright treaties and with national copyright laws. One of the most successful tactics used to ensure copyright compliance has been to link it to broader trade arrangements. American copyright holders, for example, have pressured their government to threaten countries who do not enforce copyright with the withdrawal of trade preferences. These threats had a role in convincing such major U.S. trading partners as Taiwan and Singapore to cease most pirating. A recent effort has been made to link copyright adherence to the GATT system of trade relations. While these efforts have yielded some results in terms of immediate compliance, it can be argued that copyright must be "sold" on its own merits, that it is as much a moral issue as a commercial one, and that making copyright hostage to international trade, an arena where Third World nations have little leverage in any case, is in the long run detrimental to the emergence of a copyright system based on consensus and mutual understanding.

Western publishers must take a long-term view of world publishing. This means their policies must permit offering inexpensive access to books and journals for reprinting and translation. There is a feeling in the Third World that Western publishers often simply ignore the requests of Third World publishers and institutions because there is little money to be made and discussions often become complex and sometimes acrimonious. Western publishers must respond positively and quickly to requests and understand the problems faced by Third World publishers.

Joint ventures or cooperative arrangements with indigenous publishers in the Third World may help both sides. The Western publisher provides expertise, products, and sometimes capital. In return, access to markets is opened up. Such ventures must be on the basis of equality, and autonomy for Third World partners is important. There are many kinds of joint ventures, ranging from a major involvement to cooperation on specific projects. Many involve work together on issues relating to copyright.

The book trade relationships between the industrialized nations and the Third World are unequal. Books are exported from the West to the Third World. Copyright permissions are requested by Third World publishers and are sometimes granted by counterparts

in the West. There is very little traffic in the other direction. It may be possible to significantly increase the import of books from developing countries and thus strengthen Third World publishers significantly. It may also be possible for Western publishers to obtain rights to Third World books for publication and distribution in the West. Because most of the world's books are published in the major industrialized countries, the unequal relationship will continue, but there may be ways of ameliorating it to a modest extent. It is important to keep in mind that what is a modest transaction to a Western publisher may be a significant development to a Third World firm.

### Conclusion

Copyright is, in a way, symbolic of the relations between the 'haves' and 'have nots' in publishing. All of the cards are in the hands of the Western publishers. They control the international copyright treaties, which were, after all, established by them and with their interests in mind. The Western publishers dominate the world book trade. The powerful multinational publishers, which are Western controlled, reach into many countries. In the Reagan-Thatcher era, Western governments have played the 'trade' card to ensure compliance with copyright and patent regula-

tions. While the major beneficiaries have been software producers, film companies and the like, book publishers have also benefited and have strongly supported these initiatives. Copyright is widely respected internationally and, at least for books, is more tightly enforced than has been the case in the past.

The time has come to recognize that the production of books and journals is more than a business and that trade in knowledge and knowledge products is somehow different than commerce in automobiles or coconuts. Those who control knowledge distribution have a responsibility to ensure that knowledge is available throughout the world at a price that can be afforded by the Third World. I am not advocating overthrowing the copyright system, or even weakening it. I am arguing for a broader understanding of the responsibilities of publishers in a complex and unequal world. Such an understanding will, no doubt, require some rethinking of the relationships between the knowledge 'haves' and 'have nots'. In an era of interdependence, this is not an altogether bad thing. It is likely to be controversial and perhaps unpopular. No one with power likes to share it. But if the immense challenges of Third World development are to be solved, publishers will have to play a modest role.

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REGISTRAR



# Constructivism in Science Education

Anand G. Fadnis\*

*How do we know that we believe we know?*

This is the most fundamental primary question and attempts to answer the same have led to several theories and models of 'knowledge'. One of the most general and accepted model is based on the hidden assumption that knowledge can be transferred intact from the mind of the teacher to the mind of the learner. Educational researchers therefore have always tried to find better ways of doing this in an effective way. However, it is also a well known and accepted hypothesis that 'teaching and learning are neither concerted nor synonymous processes'. One can teach, and teach well without having the students learn.

The traditional view of knowledge is based on the age old common sense belief of 'realist perspective' which leads to a picture-like notion of knowledge. In this a correlation/correspondence of knowledge and reality is considered as a yardstick for knowledge. Thus, this view always looks for a 'match' between knowledge and reality in much the same way that one might try to match two samples of paint. However, it is almost impossible to judge such correspondence because the same reality is perceived differently through different mental images depending on an individual's perception.

Another traditional view of knowledge views mind as 'black-box' in which the input (stimulus) and response (output) can be judged accurately but the mechanism of this transformation can only be guessed. Thus the relationship between mental structures/images and the real world is always obscure.

The present attempt is directed to present an outline of 'radical-constructivist' model of knowledge formulated by von Glaserfeld<sup>1</sup>, its relationships with the traditional views including Piaget's theory of intellectual development<sup>2</sup> and its possible use in understanding some tricky situations in science (chemistry) classrooms.

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## Constructivist Model of Knowledge

The underlying basis of this model can be summarized in a single statement: "Knowledge is constructed in the mind of the learner". This implies that learners construct understanding and do not simply mirror and reflect the reality. They always look for meaning and try to find regularity and order in the events and assimilate them in their own way even in the absence of full or complete information about the event/reality. von Glaserfeld described the construction of knowledge as a search for 'fit' rather than 'match' with reality. Thus in this model, knowledge is assumed to fit reality in the way a key fits a lock which is similar to 'host-guest' concept frequently used in chemistry.

It is the difference between the concepts of 'fit' and 'match' that shows the radical difference between constructivist model and other traditional views of knowledge. If knowledge matches to reality then two or more individuals *must* have similar copies or replicas of reality in their mind for a particular knowledge (concept). But when the correspondence is changed to 'fit' then the observed different perceptions of knowledge (concept) of a reality depending on an individual can be appreciated. Every individual thus builds his/her own view of reality to find order in the chaos of signals received from the reality.

The constructivist model presents an instrumentalist view of knowledge. Knowledge is good or acceptable if and when it works and helpful in achieving the goal/aim of instructions in the classroom.

## Piaget's Theory and Constructivism

Jean Piaget, Swiss developmental psychologist and genetic epistemologist is a rare individual who was initially trained in natural science (Zoology-Ph.D.) but is recognised as leading theorist in social science (Psychology)<sup>2</sup>. Piaget's theory of intellectual development stresses the interrelationships between opposing views about the roles of 'known' (teacher) and 'knower' (learner) by developing interaction theory. The importance of environment is acknowledged as well as mental structures which transform personal experience (reality) into knowledge. Piaget



had identified the relationships amongst the various forms of knowledge in natural and social sciences and described them as a circular structure with logic-mathematics as the origin (Fig.-1).

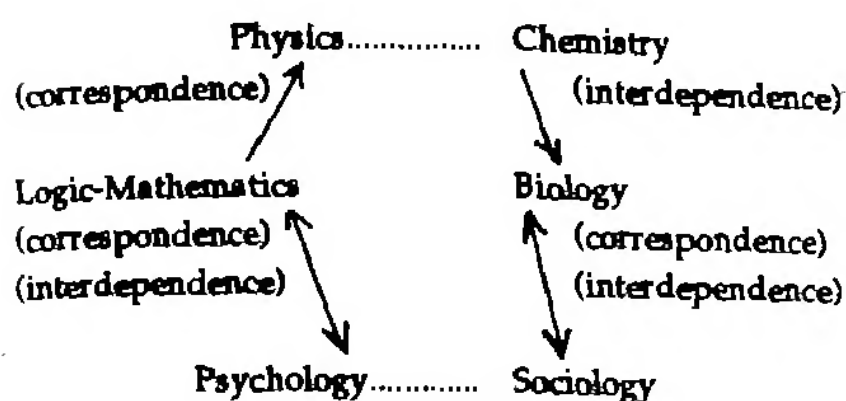


Figure 1- The circle of sciences

Piaget used 'correspondence' for the theoretical-experimental relationship and 'interdependence' for reducing or explaining relations (Fig.1). Other words used in Piaget's work include 'assimilation', 'accommodation' and 'equilibrium'. He also differentiated between physical, logico-mathematical and social knowledge.

Constructivist theory of knowledge can be considered as a logical outgrowth of Piaget's model of intellectual development<sup>3</sup>. Piaget also argued that knowledge is constructed and can be understood in terms of 'cognitive functions' such as organisation and adaptation which remain constant throughout development and 'cognitive structures' which change with age and experience. Adaptation or 'equilibrium' can be described in terms of an internal self-regulating biological mechanism of 'assimilation' and 'accommodation' processes. Piaget can in fact be considered as the 'first' constructivist in the sense that his view that knowledge is acquired as a result of a life long constructive process in which we try to organise, structure and restructure our experiences in the light of existing scheme of thoughts. Indeed his definition of 'knowledge-Invariance under transformation' has no meaning outside constructivist model. von Glaserfeld has argued that 'assimilation' occurs when what we perceive is adjusted to 'fit' into the already assembled conceptual structures in the mind<sup>2</sup>. However, when that does not 'work' i.e. when our experience does not 'fit' into ideas, then the equilibrium is disturbed but is re-established by the adjustment of our scheme (concept) and is made to 'fit' into new ideas by the 'accommodation' process. Thus, the constructivist model accommodates almost all the views of Piaget theory and hence can be used in any field including science (chemistry) education.

## Constructivist Model and Science Education

Constructivist model raises an important question, 'If individuals construct their own knowledge then how can groups of learners appear to share common knowledge? The key to answering this question is to remember that construction of knowledge is a continuous process and simultaneously it is also tested. Individuals are *not* free to construct any knowledge, their knowledge must be viable and must also 'work'. Our experiences test the viability of knowledge in much the same way that Darwin's theory of evolution tests the viability of an organism. The assumption of sharing 'common knowledge' by a group of learners is generally due to the fact that they are compelled by the circumstances to 'fit' their knowledge to a 'reality' (situation) with restricted boundary conditions.

Another implication of constructivist model in the classroom is that it helps in explaining and understanding the origin of common misconceptions of science students and also the 'resistant' nature of these misconceptions to subsequent instructions in the class. It is a common experience of a science teacher that 'misconceptions' conceived by the students in the initial instructions are most resistant. This is mainly because of the firm (rigid) description of the concept leaving no room for an exception. Thus the only way to replace a misconception is to construct a 'new' concept which 'fits' more appropriately into changed situation.

Social knowledge such as days of week or symbols for the elements can be taught by direct instructions, whereas the physical and logico-mathematical knowledge cannot be transferred intact directly. The use of constructivist model in such situations requires a subtle shift in the perspective of an instructor from teaching by imposition to teaching by negotiation.

The most frequently used 'discovery' approach in science (chemistry) education makes the use of constructivist model. It starts with a familiar concept that makes sense to the learners and then the 'scope' of the concept is enlarged by exposing learners to new and different situations and allowing them to build their understanding to discover the final form. Thus, the learners are convinced by their own experiences that "scientific (chemical) knowledge is a product of rational thinking and it can be constructed stepwise" instead of "knowledge is based on arbitrary rules to be accepted on the basis of authority of the instructor".

The other important implications of constructivist model in science education are :

- It emphasises the importance of a two-directional flow of information between teachers and their students in and outside classroom;
- It explains and provides theoretical basis to distinguish between meaningful and 'rote' learning in which the learners relate new knowledge to the existing relevant concepts and in the other it is acquired simply by verbatim memorisation respectively; and
- It also explains that why the logical order of presentation of material by an expert is *not* always best and the learners can choose their own sequence of learning.

### Concluding Remarks

Science teaching and learning are constructivist activities. The problem solving can be viewed as an apt illustration of this model if the first steps in problem solving consist of the following : (a) Try something; (b) Try something different; (c) Check that where these two steps lead. This is very much similar

to the techniques used by scientists in their research. Thus now with the application of constructivist model of knowledge in science education, one can appreciate the fact that science is *not* collection of laws, a catalogue of unrelated facts. It is a creation of the human mind, with freely invented ideas and constantly modifying the concepts.

Each individual-student, teacher or a scientist — constructs individual model of the universe on the basis of pre-existing cognitive structures/schemes. The progress in science results from the conflicts between the theories evidenced by the unique construction of knowledge (concept) in the individual minds.

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REGISTRAR

# Education System in India

## Problems and Prospects

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One of the most important ingredients of socio-economic development that has attracted the attention of the planners, policy-makers and leaders in the recent past is 'education.' It is an established fact that education is an important catalyst of socio-economic transformation. In the advanced industrial societies of the world, education is provided by the state as a matter of right to all its citizens.

The term 'education' is derived from the Latin word 'educare', which means bringing up a child, both physically and mentally. In a broad sense, education denotes a group process by which culture is transmitted from one generation to another. Aderemi Olutola (1981) describes education as "a process of socialization, of change and innovation, of preservation and dissemination of societal values and of the total development of an individual from birth to death".

Education influences the structural elements of the society and the living mode of the individuals. It has also a bearing on the thought and behaviour patterns and the personality structure of an individual. Education, in fact, performs two important functions — conservative and creative. In its conservative function, education transmits the cultural heritage to the younger generation of the society. The traditional societies favour this function of education and it still continues to be of prime importance. However, in modern human societies, innovation and change are more important than they were in the traditional societies. To provide change is the creative function of education. Modern education inculcates new ideas and thought patterns along with the transmission of established cultural, social and moral values. It does not make an individual dogmatic, rather, it makes him or her a rational human being capable of challenging the old values and generating new ones. Thus, creative function of education makes individuals receptive to

change. However, these two functions of education i.e. the conservative and the creative, are not opposed but complementary to each other (Bhatnagar, 1972).

The creation of new social patterns is another important function of education. This function is, however, a bit complex and cannot be performed by education alone unless it is supported by social, economic and political systems. Thus, the main objectives of education are two-fold. On the one hand, education is regarded as a process of empowerment through the imparting of knowledge, skills and values to the individuals and on the other hand, it is an important instrument of social change.

The role of education was recognised as vital in arousing an awakening among the Indian masses even in the pre-independence era. Its contribution in breaking the shackles of slavery cannot be undermined as far as it helped in the growth of an enlightened intelligentsia which carried forward not only the movement for independence but also a relentless struggle for socio-economic reforms. After independence, our planners, policy makers and leaders placed immense faith in education as an important means of socio-economic transformation and modernization.

### The Maladies

There is no denying that India has made tremendous progress in the field of education especially after independence. But it may be mentioned here that our present education system is not without maladies. As we know, there is a veritable explosion of knowledge in all fields all over the world. In today's world of high competition and high technology, high quality education is necessary not only for the survival but also the socio-economic development of a nation. But during the past four decades, not much has been done to improve, modernize and reorient our education system to suit the varied socio-economic and cultural developments that have been taking place in our society. The overall academic standards seem to be deteriorating and the prospects are discouraging. The failure of the system can be ascribed to a number of factors including a perennial shortage of funds, inadequate

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infrastructural facilities, defective examination system, politicization of the academic institutions, distancing of the educational institutions from the society and a general lack of concern etc.

Our existing education system, as Freire (1972) says, works more like a 'banking system', where the students are the depositories while the teachers are the depositors. In other words, teachers deposit their knowledge in the minds of the students without seeking to draw the best out of them. Instead of broadening the mental horizon of the students, our education system seeks to stuff their minds with mere academic information. It gives premium to raw learning rather than to analytical ability. Further, there is a growing erosion of essential values and an increasing cynicism in our society. Instead of being a forceful tool for the cultivation of social and moral values, education is doing very little in value inculcation. It promotes "the values of superiority of white collar jobs, elitism and localism rather than of dignity of labour, equality and universalism" (Sharma 1994).

In our education system, teaching is subordinate to examinations. Our examination system is quite defective because on the one hand, it encourages selective study and rote learning and on the other it discourages innovative teaching and serious and sustained study. Further, dictation of notes in the classrooms and the increasing trend of mass copying in the examination halls nullify the very objectives of teaching and examination. Besides, the courses offered by most of our educational institutions are archaic, rigid, irrelevant and ill equipped to the emerging needs and challenges of the society. Our education system also suffers from ambiguity, multiplicity and incompatibility of objectives. It lacks clarity of purpose and fails to evolve priorities which, in turn, adversely affect its performance.

Our educational institutions are faced with the crippling problem of inadequate funds. The latest estimates indicate that only 3.7% of GNP is spent on education. Such an inadequate investment adversely affects the quality of education and the socio-economic development of the society, causing an irreparable damage to the future generations.

During the past two to three decades, the rapid unplanned and haphazard growth of educational institutions has caused considerable deterioration in the academic standards. Most of them have been estab-

lished neither on the basis of needs nor have they enough students, teachers and basic minimum infrastructural facilities like buildings, classrooms, laboratories, playgrounds, libraries, etc. However, they exist and continue to impart sub-standard education. Further, our educational institutions are over crowded with the students who do not even know the purpose for which they go to these institutions. The enrolment of a large number of unmotivated and undedicated students because of liberal and unrestricted admission policies, has led to further decline in our educational standards.

Another most undesirable development that has taken place after independence is the entry of party politics in our educational institutions, especially at college and university levels. These have almost become the instruments of political advancement and cradles for nurturing and promoting the party cadres. Politicisation of unions of students, teachers and non-teaching employees in the guise of democracy has turned our campuses into battlefields for rival political parties, groups, and factions. The way politics is played in these educational institutions makes one feel that we have become blissfully oblivious of the prime objectives for which they were established (Gopalan, 1995).

### **The Remedies**

Keeping in view these deficiencies of the existing education system, there is a danger of education becoming obsolete and irrelevant. Therefore, at this critical juncture, it becomes imperative for us to make education more purposive and effective. To achieve this objective, it would require immediate corrective and imaginative measures to make it meaningful and up to date. In fact, we shall have to revamp our entire system of education.

No doubt, the task of reforming our education system is not all that easy to accomplish. We need to develop a consensus on certain minimum programme of action on education. First and foremost measure which we should adopt to improve our system of education is that education should be treated as an important sector of investment for nation's socio-economic development, because inadequate investment in education sector will result in irreparable loss to the future generations. The government should give priority to this sector and the allocation of funds should be increased considerably. The Prime Minister's an-



nouncement that it will be raised to 6% of GNP from the next Plan is indeed a step in the right direction. Simultaneously, the educational institutions themselves should also explore new avenues for the generation of their own resources to function smoothly and productively. In order to tackle the problem of resource generation effectively, they should create resource development units, which will make them concentrate on academic and administrative matters as these units will have the responsibility of exploring the fund-generation avenues.

Party politics must be banished from educational institutions. There is an urgent need for depoliticising them through rational and well planned strategies. Educational institutions are temples of learning which should not be corrupted, sullied and polluted by perverse political manoeuvring. There should be no political interference in the functioning of these institutions.

The quality of education to a great extent depends upon the skills and ability of the teachers. In this fast changing world of knowledge, a good teacher should keep his knowledge updated on a continuing basis and should remain in touch with the national as well as global scientific and academic developments. It, thus, becomes mandatory that only persons of high academic and intellectual calibre should be appointed on the basis of merit through impartial and objective recruitment procedures to teaching positions in the educational institutions. The teachers appointed on caste, communal, regional and such other parochial considerations can never raise the standards of education. The positions of the teachers should be continuously reviewed to provide incentives for their good performance and disincentives for bad performance. Our teachers have become lazy, indifferent and unmotivated due to the existing scheme of automatic promotions to higher grades on the completion of a certain period of service. This promotion scheme should be substituted by an open selection on the basis of merit which will promote academic mobility, provide incentives to the talented and effectively counter the ills of inbreeding. There is also a need to pay serious attention to the issue of professional ethics of the teachers. The conduct of teachers directly or indirectly, influences the minds and behaviours of the students. The teachers should adhere to a code of professional ethics. The regulations should be enforced to ensure the efficient working of teachers and to make them accountable. This is the only way to refurbish the noble

image of the teaching profession (Gopalan, 1995).

In order to make our education system more meaningful, it is necessary to introduce radical changes in the traditional curriculum prevailing in our educational institutions. The courses and programmes have to be reviewed and redesigned on a continuing basis to meet the growing needs and challenges of the society. Another way to make education relevant is the introduction of job-oriented and vocational courses in higher education institutions. The overcrowding in the educational institutions should also be checked by restricting admissions to those who have a genuine interest in higher studies.

Education not only transmits knowledge and skills but is also a forceful tool for the cultivation of social and moral values. It inculcates and imbues human values overtly or covertly. The National Policy on Education (1986) has rightly emphasised the need for strengthening a system of value oriented education. Such a value based education would help in eliminating obscurantism, religious fanaticism, violence, superstition, fatalism, casteism, regionalism and such other parochial considerations. Value oriented education has a profound positive content closely associated with our cultural heritage, national objectives and universal vision. It covers the entire process of learning, developing and logical reasoning.

Value based education inculcates in students a spirit of service, nationalism, patriotism, secularism, equality, democracy, scientific temper etc.; develops among them a sense of commitment to these values, and provides them an opportunity to abide and live by these values. Thus, the main aim of value based education is the evolution of a 'complete man', not just a social or biological entity.

Now the question arises, how can education inculcate social and moral values among the people? One of the ways to inculcate these values is by designing a course on human values and making it a part of the curriculum. The social and moral values cannot be instilled merely by moral instructions. They should be so integrated in the curriculum that they do not obtrude. The best way to transmit the values is "through practice rather than precepts, through example in action rather than mere instructions" (Sharma, 1994).

Yet another important corrective measure which can be adopted to improve the education system is the

replacing of our existing examination system by a system of continuous evaluation and internal assessment. This will ensure regular study habits, evaluation of students' proficiency, elimination of fear of examination and teachers' accountability. The course teacher will be responsible for assessing and grading the students. The assessment should not be secret, as this type of examination system will develop a spirit of competition among the students and provide them with an opportunity to discover their own weaknesses and limitations pointed out by the teachers.

Last but not the least, the effective use of mass media should be made in imparting education. The environment in the educational institutions needs a change towards greater flexibility and transparency so that the students are able to perform their expected roles in the socio-economic transformation of the society.

In a world where socio-economic development is becoming more knowledge intensive, the role of education becomes all the more crucial. Education will

have to be made a motivating force in socio-economic transformation of our society. Therefore, the need of the hour is to concentrate on reforming, reorienting, rejuvenating, reinvigorating and revitalising the entire education system with a view to meet the emerging needs and challenges of the twenty-first century.

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# Instructional Media for Teaching Excellence

N.D. Mathur\*

In the present circumstances, when even the dedicated and committed teachers are waiting for their students in the classes and classrooms have become silent, there is an urgent need to break this silence. The traditional lecture method has lost its relevance as it has become outmoded and one dimensional.

Instructional media makes use of the power of pictures, words, sounds to compel attention, to help an audience understand ideas and acquire information too complex for verbal explanation alone, and to help overcome the limitation of time, size and space. The advantages of using instructional aids have been recognised for a long time, their acceptance and integration within instructional programmes, have been very slow. There has been increasing evidence that positive results take place when carefully designed, high quality instructional aids are used either as an integral part of classroom instruction or as the principal means of direct instruction.

We learn through the five physical senses. Of the five senses the eye is by far the most efficient avenue of learning. Words alone are not enough. Words are mere symbols. Even the same word may be interpreted

in the different ways by different people. Audio-visual aids help make the meaning of our spoken words clear as we put our ideas across through more than one sense. The following is the relative importance of various senses in learning ;

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|------------------------------|-----|----------|
| 1. The sense of sight        | 75% | (Visual) |
| 2. The sense of hearing      | 13% | (Audio)  |
| 3. The sense of touch & feel | 6%  |          |
| 4. The sense of smell        | 3%  |          |
| 5. The sense of taste        | 3%  |          |

Audio-visual aids constitute 88% importance in learning. There are several reasons for using them in teaching process. They help the teacher in achieving teaching excellence. Table -1 shows the various kinds of teaching aids related to various organic senses, learning can't occur unless there is some event or fact or symbol or other form of stimulation present. These stimuli are ideas, facts, generalisations, books, suggestions, pictures, lectures, maps, graphs, TV, Sports, events, buildings, movies, people around them, facial expression of the teacher, pats on the back, derogatory remarks from other students, etc. The students use their

**Table 1 : Teaching Aids**

<i>Audio</i>	<i>Visual</i>	<i>Audio-Visual</i>	<i>Activity</i>
1. Radio	1. Black Board	1. Television	1. Teaching
2. Gramophone	2. Map	2. Projector with sound	2. Drama
3. Tape recorders	3. Graph	3. Video tape	3. Puppetry
	4. Chart		
	5. Poster		
	6. Cartoon		
	7. Picture		
	8. Projectors		
	Overhead Projector (OHP)		
	Slide Projector		
	9. Models		
	Working models		
	Non-working models		

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mind and their senses in diverse ways in order to learn. Students learn by action, observation, imitation, memory or recall, imagination, reasoning and repetition. The learning process is the result of a student using his mind to acquire facts, ideas skills and principles which are new to him. Learning consists of changes in the cognitive, psycho-motor and effective behaviours of an individual.

There are inherent merits of using instructional media in teaching. It saves the teachers time and enhances the efficiency of instruction. It forces the teacher to think through whole presentation and stimulates students initial interest, arouses "sensations". By this retention of knowledge and speed of comprehension increases. It provides for individual differences, develops a continuity of thought and involves emotional learning. It can motivate goal seeking and evaluate outcomes.

### The Overhead Projector

The Overhead Projector (OHP) has revolutionised classroom teaching and seminar presentations. This equipment has many advantages that readily appeal to the teacher. Ease of operation, focusing, better control over classroom, better group attention and group reaction and personalised presentation are a few advantages of using OHP in the classroom. OHP may be placed in front of the room. Place the screen where bottom extends down no lower than head level. If the audience is large, increase the distance between the screen and the projector and a large image will result. The on/off switch can be used to transfer attention from the screen back to the teacher and then back to the screen. Photocopying of the prepared transparencies is also possible.

### The Slide Projector

Photographic technique and pictorial composition are two aspects of one theme, because images are constructed by employing photographic techniques in a very particular subject oriented way. The slide tape is a piece of negative which forms the still image (coloured or black and white) when placed in front of a projector machine. The module of slides (depending on the duration of the lecture, usually 15-20 number of slides, for a lecture of one hour duration) are clicked or edited from the existing collections. It is interesting to students to see object or figure discussed by the demonstrator. It is less time consuming as demonstrator has to talk less, about the theme. Initial investment may be costly but it is economical in the long run. One slide costs Rs. 10-12, including cost of the film, developing and mounting. So a 'module' of 20

slides will cost about Rs. 250/- approximately. It can be stored and retrieved easily and occupies less space as compared to books and other printed materials. Following are the equipments needed for this purpose :

1. Camera (35 mm, Sir, 50 mm lens)
2. Film roll (Fuji chrome, or Ekata Chrome, 35mm)
3. Slide Projector,
4. Slide Box (Storage)
5. Screen, if not available wall or bed sheet will work.
6. Pointer to point out the object.

There are several other ways in which the quality of teaching can be enhanced. Films and specialised films on video cassettes can be used as a base for information, discussion, sensitization and interest. Teaching aids introduce activity and increase participation and are thus a valuable asset to teachers.

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# Reconciling Economic and Social Development

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**Shri Pranab Mukherjee, Union External Affairs Minister and Deputy Chairman, Planning Commission, delivered the Convocation Address at the forty-fifth annual convocation of Panjab University, Chandigarh. He said, "It is now well recognised that pursuit of economic development does not in itself lead to social development; though it generates resources which can help achieve faster progress in social development. Special efforts are required to bring about a congruence between economic development and social development, so that along with multiplication of wealth of nations, increase in trade and general improvement in levels of living, progress is also achieved in terms of life expectancy, literacy, education, reduction of infant mortality, etc. Social progress has also been associated with strengthening of democratic institutions that enable expansion of civil liberties." Excerpts**

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For too long, it appears, we have been obsessed by a single dimension of development, that is, 'economic development'. Maybe it was the condition of extreme poverty in which most of the developing countries found themselves in the post-colonial phase, that focused all attention on income growth. May be it was the shadow of the cold war which largely shaped our perceptions of this source of power which was seen in economic growth and industrialisation. It is by hindsight that we know now that one-dimensional pursuit of economic growth failed us even in achieving this. Most of the developing countries failed to achieve this goal of development. Poverty persisted. The world order remained unequal. In the meanwhile the population went on increasing. On the other hand, there was a mad rush on using up the non-renewable endowments of the earth — so essential for sustaining and nurturing life. All the countries particularly the industrial countries exploited these resources to the detriment of ecology and environment. Many scholars had been

working on redefining the concept of development. The Rio Declaration on Environment and Development says, "In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation". It was the Earth Summit at Rio (1992) which gave international recognition to the concept of "sustainable development". It is a significant advancement on the concept of development.

The term "Sustainable Development" is meant to highlight the importance and need for integrating environmental considerations in economic growth and development. Growth could be achieved by over exploiting environmental and ecological resources. But this depletion of the basic non-renewable resources would make the growth unsustainable over a period of time. Hence, there was a need and also a basis for qualifying and limiting the concept of growth or developing by pre-fixing the word "sustainable" to it. A non-destructive type of development, the development that does not deplete or

destroy the resources of the earth, or regenerates such resources simultaneously with their use, is sustainable.

The problem of unsustainability is two-fold. One is the mismanagement of basic resources, like soil, water, forests, certain types of minerals or even the air. The other and the more serious problem of unsustainability lies in unsustainable levels of consumption — mostly in rich sections of population and in the rich countries. Unsustainable levels of consumption not only directly or indirectly deplete the earth of its basic life-giving and life-sustaining resources, but also destroy the ozone layers, thus, threatening the entire life on earth. Austerity in consumption, recommended by our sages, appears to have been based on profound wisdom.

Another idea which has gained ground in recent years and which has contributed to the broadening of the concept of development is the concept of "Human Development". UNDP has attempted to quantify the concept by evolving an index of human development published in their annual Human Development Report (HDR). The concept is based on levels of income (to represent levels of living), life expectancy at birth (to represent an important element of the quality of life) and educational attainment (i.e., literacy as well as average years of schooling). It is a matter of great concern that India ranks quite low in the ranking of human development index. Our rank is 135th among 173 countries. Of particular concern in this context is our low ranking in literacy and average schooling. This calls for immediate remedial measures. Within India we have good achievers even in this respect, like Kerala in the South and Punjab in the North. We have to replicate these examples in other States.

In the Human Development Report 1994, a concept of "Sustainable Human Development" has also been introduced. We do not agree with this concept entirely. The concept of "human development" need not have such qualification or limit. A certain level of living and certain standards of health and education are only the starting points of human development. The ultimate point of human development would be development of mind and culture, and development of a value system which is conducive not only to the harmonious co-existence and advancement of all human beings but would be supportive of sustainable economic development. Adding the word "sustainable" to human development curtails the meaning and scope of human development. The meaning of economic development is rooted in the concept of production, production of material goods and services. The concept of human development need not be rooted in production. Concept of human development has human beings as the end and not just the means. Therefore, while the term "sustainable economic development" signifying a desirable pattern of development is quite acceptable to us, the term "sustainable human development" is not acceptable.

A much broader concept of development is the concept of social development. Social Development calls for a combination of several strategies which together constitute the environment needed for the achievement of the desired goals for human development. Social development is a multi-dimensional concept. It means literacy, education, good health and all that goes to make good health possible, like food and nutrition, drinking water, easy availability of medical and health facilities — both preventive and curative, and full and produc-

tive employment. It means life for the individual in freedom and dignity, free from being discriminated against on grounds of sex, race, colour, religion or caste. It means life in security where the society in which an individual lives, lets the individual live in a manner that suits him while at the same time not infringing on other people's rights. Social development obviously also means living in economic security, fostered by rapid national economic development accompanied by distributive justice.

It is now well recognised that pursuit of economic development does not in itself lead to social development; though it generates resources which can help achieve faster progress in social development. Special efforts are required to bring about a congruence between economic development and social development, so that along with multiplication of wealth of nations, increase in trade and general improvement in levels of living, progress is also achieved in terms of life expectancy, literacy, education, reduction of infant mortality, etc. Social progress has also been associated with strengthening of democratic institutions that enable expansion of civil liberties.

The world is much short of achievements in Social Development. Within many societies, both in industrialised and developing countries, the gap between the rich and the poor has increased. Further, the gap between the developing and developed countries has widened, even more so is the case of the least developed countries. There are serious social problems and problems of transition in countries experiencing fundamental and democratic changes in their political system. More than one billion people in the world live in abject poverty, and more than half go hungry every day. A large proportion of men and women, particu-

larly in Africa and the least developed countries, have very limited or no access to income and resources. Over 120 million people worldwide are officially unemployed and many more remain underemployed.

Poverty in our own country has unacceptably large dimensions. Incidence of poverty was estimated to be 29.9% of the population in 1987-88. Some expert estimates put the incidence even at higher levels. Poverty is inextricably linked with unemployment, low-productivity and underemployment. In fact in an economy like ours, underemployment and low earnings is a greater problem. This means that even though a large proportion of population is working, it is difficult for them to make out living even at a subsistence level. Literacy is just 52 per cent. Still number of people do not have access to safe drinking water, adequate shelter and health services. Basic Human rights to life, liberty, property and security are ensured in the constitution. Fundamental rights are protected by independent judiciary and strong public opinion. But access to these rights and their full enjoyment cannot be ensured in the absence of minimum wherewithals for living a decent life.

To reduce and eliminate widespread poverty, there is need for a two-pronged approach. One is to involve the poor themselves in the task of poverty eradication. The other is to clearly define and implement the elements of a Development Strategy which is conducive to elimination of poverty. Involving the poor themselves in the task of poverty eradication requires building up organizations of the poor, employment of the poor and creation of sensitive support mechanisms. Through their own organizations, the poor can save and invest effectively, organize

their production activities, market their products, excess credit and inputs. Governments and NGOs both can play a role in creating such organizations. Empowerment of the poor means that they should be enabled to assert the right to resources (including credit) intended for them and enhance their dignity and self-respect. There has to be a particular emphasis on empowering women. This is possible by organizing the poor, imparting knowledge to them by disseminating information and raise their levels of awareness. The creation of sensitive mechanism includes support structures of non-government organizations, financial structures such as banks for the poor, cooperatives, non-profit private groups and action research groups.

Important elements of a development strategy conducive to poverty eradication are — Agriculture and Rural Development; a system for household food security, and fostering of human development. Most of the poor in the developing countries (of Asia and Africa) live in rural areas and depend directly or indirectly on agriculture. Wherever agriculture has achieved high levels of productivity, poverty has been significantly reduced or eliminated. An agricultural strategy would imply land reforms, strengthening of peasant agriculture based on availability of inputs (including credit) and improvement in rural infrastructure. Agriculture, development needs to be supported by diversification of agriculture, development of agro-processing and other rural industries and promotion of agro-exports.

A sharply targeted and efficient public distribution system can help stabilise food prices and ensure adequate availability of food to the poor at the household level at affordable prices and food security for the poor. The right choice and product mix with the latest tech-

nology can lead to increased employment generator without compromising our competitiveness. To foster human development, state support should continue to be provided with special emphasis on nutrition, health, education, shelter, and self-employment with sharper focus on promoting the status of women and rights of the child in the society.

National efforts are obviously crucial in promoting social development. However, these also need to be supported by enhanced international cooperation. The real resource base of many developing countries has been adversely affected due to several external factors, including heavy debt service payments, decline in terms of trade, lack of access to markets and technology and stagnation in resource flows. Cuts in public expenditure and subsidies, increased unemployment and reduction in wage rates have been some of the concomitants of structural adjustment programmes, which have affected the ability of the developing countries to tackle the core issues of social development. International financial institutions in general and the rich countries in particular would have to be sensitive to the social development needs of the developing world and to neutralise the adverse social impact of the reform programmes, if poverty is to be eradicated rapidly. Economic development need not necessarily lead to social development. At the same time, there cannot be social development if it is not accompanied by sustainable economic development.

A society which provides adequate and gainful avenues for absorption of its labour force also fulfils the primary condition for fostering social development as a national process. A high rate of output growth is necessary, but not always a sufficient condition for high

growth of employment. Employment growth has to result both from the growth of the economy and restructuring of output composition of growth.

Experience has been that unemployment has persisted with growth, even though societies have always aimed at "creating more jobs with growth". "Growth" has been creating jobs, but not enough to solve the problem of unemployment. "Growth" as conventionally understood, will alone not solve the problem. In the search for a real remedy, we have to look for the deeper causes and the basic sources of the malady.

The overall trend of technological development has been such that productivity gains are defined largely in terms of labour saving, and not so much in terms of saving of the basic land-based resources — that is, energy, water, forests, minerals, environment and ecology. In fact, there has been a constant erosion of land-based basic resources, while labour saving has been achieved. The first and the most important imperative of creating full employment conditions is giving a new direction to technological development so that a better or relevant technology comes to be defined as one which raises productivity by saving on land-based and environmental resources rather than by saving on labour alone. The Governments, the scientific community and industry have to arrive at a consensus on this point and have to cooperate in this endeavour.

The other important reason for persistent unemployment is institutional in character and is related to the trends in technological development. Production systems are increasingly getting organized on larger and larger scale — so as to reap the economy of scale. And the most significant economising has

been the economising of labour — not so much of other resources and not at all of the capital. The trend which started with the industrial revolution has reached such proportions that it has virtually eliminated all possibilities of self-employment in the production processes turning almost every member of the society into a paid worker or a person seeking work on wages — a mere wage slave. The small producer is lost in the world of giant corporations. When this trend is extended to agriculture — that is corporatisation of agricultural production, eliminating the peasant farmer, the results have been pretty disastrous.

It is in this context that we lay emphasis on land reforms, peasant agriculture, self-employment and the informal sector. But all these will have to be supported by productivity-raising technology. The educational and training systems have to be re-oriented with Gender Equity always at the centre, towards creating entrepreneurs rather than workers who only know how to follow instructions like automatons. And hence the importance of the role of Government and of support structures, including the giant corporations, which could play a very fulfilling and in enlightened self-interest, a profitable role as support structures.

As I mentioned earlier, social integration is of crucial significance to social development. Disparities in development across areas, regions and social groups combined with low level of income have led to the existence of certain marginalised groups who need to be integrated into the mainstream of development. The National Plan attempts to fulfil this task through programmes for development of women and children, scheduled castes, scheduled tribes, minorities, other backward classes and the disabled.

The Government of India frames policies for such sections of the society as would require special attention, so as to ensure their development. Some of the more important of such policies thus framed are the National Health Policy, the National Child Policy, the National Labour Policy and the National Nutrition Policy. The rights and the requirements of the general population and of the poor and the vulnerable segments, as propounded in these policy documents become the basis for positive legislation in favour of these sections.

Social development pre-supposes the evolution both of the individual and the society in a manner that happiness for both is ensured. Even as society recognises the individual's rights to live in a manner he or she wants, the individual also should recognise the rights of other members of the society and of the society itself. This same law of respecting one another's rights when expressed in terms of international relations would mean respect for the sovereignty of nations and non-interference so that each nation pursues its developmental goals as it deems fit, in a framework of its own national security, without infringing on the sovereign rights of other nations. Even as a society accommodates its members through discussion and consensus, so should the comity of nations. The problem arises only when nations lay down the laws for others or try to do so. It is important for all nations to realise that while accommodation between nations is possible, such accommodation cannot be at the expense of nations that are weaker economically or otherwise and that such accommodation should be achieved on a footing of equality consistent with the principle, that all nations are equal. While this equality has to be remembered at

all times by all nations, it should also be remembered that this equality cannot be sustained without economic development and also that many countries of the world described as the "developing world" happen to be in the situation in which they find themselves today, because of certain historical reasons. In that sense and against that background, there are responsibilities cast upon the developed world to redress the imbalances which the developing world suffers from. Human beings have rights. So do nations of the world. The rights of nations in economic and social development terms require to be respected and redressed in a historic perspective.

As the United Nations moves towards the World Summit for Social Development in March, 1995 in Copenhagen, it cannot do better than to recall in this context the words of Mahatma Gandhi to whom poverty was not merely hunger, but also spiritual starvation. Whenever we have doubt, let us recall these words of Mahatma Gandhi :

"I will give you a talisman. Whenever you are in doubt, or when the self becomes too much with you, apply the following test : Recall the face of the poorest and the weakest man whom you may have seen, and ask yourself, if the step you contemplate is going to be of any use to him. Will he gain anything by it? Will it restore him to a control over his own life and destiny? In other words, will it lead to Swaraj for the hungry and spiritually starving millions?

Then you will find your doubts and your self melting away."

If we who are assembled here would keep this talisman in our hand, we would find easily the answers appropriate to our concerns in social development.



## Recent Trends in Pharmaceutical Sciences

An International Seminar on "Recent Trends in Pharmaceutical Sciences" was held at Ootacamund under the chairmanship of Prof. V.B. Desai, former Drugs Controller of Karnataka. The seminar was co-sponsored by the J.S.S. Mahavidyapeetha, Mysore (J.S.S. College of Pharmacy, Ooty & Mysore); The Tamil Nadu Pharmaceutical Sciences Welfare Trust, Madras; All India Council for Technical Education, New Delhi; The Tamil Nadu Dr. M.G.R. Medical University, Madras and the Council of Scientific and Industrial Research, New Delhi. 824 delegates representing the pharmaceutical industry, national institutes, universities and colleges and research centres from India and abroad attended the seminar which comprised of plenary lectures, invited lectures, symposia, "Pharma-Trade-Exhibition" and medical plants exhibition.

Inaugurating the seminar Dr. S.K. Khanna, Chairman, All India Council for Technical Education, emphasised that all research activities should have the active participation of the industry and research should be linked to the industrial sector. He stated that the recent liberalisation of the economy had also liberalised the pharmaceutical industry and stressed the need for a national drug policy and national pricing policy. Referring to the goal of Health For All By 2000 AD, he regretted that at present India had the largest number of illiterates and the largest population without proper sanitation and drinking water. All research activities should be aimed at making the common man healthy and happy, he suggested.

Sri Shashi Shekhar, Collector of Nilgiris, in his address, said that about 400 plants with medicinal properties were endemic to the Nilgiris. They should be protected at all costs and utilised properly. Dr. B.P. Rajan, Vice-Chancellor of the Tamil Nadu Dr. M.G.R. Medical University, Madras said that there was a tremendous demand for pharmacy education in the country. He pointed out that para-medical education was growing in importance and the present research activities in this field were inadequate. The Tamil Nadu Dr. M.G.R. Medical University, Madras was encouraging research activities and the J.S.S. College of Pharmacy, Ooty would be the first one to have an advanced satellite communication link through the University, he added.

Dr. Sembon David, Director of Medical Education, Tamil Nadu said that traditional systems of medicine such as Ayurveda, Siddha and Unani systems had made immense contributions to the medical field. He suggested that pharmacy institutions and those involved with Ayurveda and Siddha systems should do joint research work.

Shri. T.P. Gurumurthy, Director of Drugs Control, Tamil Nadu said that dissemination of information on pharmaceutical sciences was not properly done in the country and hoped that this seminar would help in bringing latest developments into focus.

Shri G. Swaminathan, Member, Rajya Sabha and also a pharmacist was conferred the "Pharmacist of

Eminence" award on this occasion.

The first scientific session commenced with a plenary lecture by Dr. M.D Nair, vice-president of SPIC (Pharma Division), Madras, on "Development of Indian Traditional System of Medicine as a Global Opportunity". He highlighted that India had a rich tradition of health care practices and some of them could be marketed globally. However, one had to face problems relating to the lack of scientific rationale, lack of uniform quality and standards of products, lack of protection of intellectual property rights, raw material shortages, shortage of uniformly trained practitioner, etc. On the other hand, in view of the potential to develop a globally accepted alternative to modern system of health care with an integrated approach needed to be worked out, he added. Prof. V.B. Desai, chaired the session.

Three symposia were organised as part of the programme. The Symposium on "Pharmacology of Receptors and Ion Transporters" was chaired by Dr. G. Jagadeesh, U.S. Food and Drug Administration, U.S.A. and co-chaired by Dr. P. Rama Rao, Department of Pharmaceutics, Banaras Hindu University. The symposium highlighted the developments that had taken place in the identification and characterisation of receptors and the mechanism by which drugs produced their responses on these receptors. Dr. P.R. Saxena from Erasmus University, The Netherlands, gave a talk on the "Introduction to Receptor Nomenclature and Drug Classifications". Dr. G. Jagadeesh talked on "The Adrenergic Receptors". Dr. G. Tejwani from the Ohio State University, U.S.A.

spoke on "Opioid Receptors". Dr. A. Gulati from the University of Illinois at Chicago, U.S.A. spoke on "Endothelin Receptors and their Biological Significance". The "Clinical Perspectives of 5-HT Receptors" were explained by Dr. P.R. Saxena. Dr. Y.K. Gupta and Dr. A. Prakash from All India Institute of Medical Sciences, New Delhi explained the "Muscarinic Cholinergic Receptors". The "Structure-Function and Regulation of Calcium and Potassium Channels" was explained by Dr. M. Gopalakrishnan, Abbott Laboratories, U.S.A. Dr. P. Rama Rao, Banaras Hindu University, spoke on "Transmembrane Signaling".

The symposium on "Pharmaceutical Industry-Innovation and Challenges" was one of the most well attended symposia as pharmacy was one subject which was almost completely identified with the pharmaceutical industry; and pharmaceutical sciences and the pharmaceutical industry derived sustenance from each other. The highlight of the symposium was the talk by Dr. Raman Venkataramanan, Professor of Pharmaceutical Sciences and Pathology, University of Pittsburgh, U.S.A. on "Optimization of Pharmacotherapy in Organ Transplant Patients". The other talks delivered were those by Dr. H.B. Bhalla, Director of B.V. Patel Pharmaceutical Education and Research Centre, Ahmedabad on "Recent Trends in Management of Research and Development in Pharmaceutical Industry" and Dr. Rajeswar Singh, Consulting Editor of *Express Pharma Pulse* on "Pharmaceutical Marketing — The Emerging Scenario in India". Dr. Ram Murty, University of Kentucky, U.S.A delivered a talk on "Drug Development: A Review of Pharmaceutical Principles" highlighting that multidisciplinary ap-

proaches provided extraordinary advantages and opened opportunities for academic and industrial organisations. He presented the salient features of the drug development process in the global context. Dr. S.C. Sharma, General Manager of Waters (India) Pvt. Limited, Bangalore discussed "LC-MS: A New Tool for the Pharmaceutical Industry". Dr. K.K. Nair, West Pharm Pack Pvt. Limited, Bombay made a video presentation on the advances that had taken place in packaging technology. Dr. Ramchandra Trikota, Agouron Laboratories, California, U.S.A. spoke on "Protein Structure-Based Drug Design".

The Symposium on "Recent Trends in Traditional and Indigenous Drugs Research" was chaired by Prof. K.C. Verma, President of Indian Pharmacognosy Society. It was co-chaired by Dr. K.A. Narendranath, Vice-President of TTK Pharma, Madras, who gave an introduction to "Traditional Systems of Medicine and Indigenous Drug Research". A New Approach to novel active compounds from Japanese Sino-Medicines was presented by Dr. M. Kimura from Japan. This was followed by a talk by Dr. Masao Hattori from Japan on "Traditional Medicines as a Source of Anti-HIV Agents". "The Search for Pharmaceutical Drugs from Natural Sources" was explained and highlighted by Dr. B.K. Chakravarthy of Cadila Laboratories, Ahmedabad. Dr. Ikuko Kimura from Japan presented a paper on "Diabetic State Accelerates the Desensitisation of Nicotinic Receptor by Enhancing Intracellular Calcium Level at Mouse Neuromuscular Synapse". Dr. K.K. Srivastava from Defence Institute of Physiology and Allied Sciences, New Delhi presented a talk on "Adaptogens in Environmental Stress Man-

agement". Dr. Rajendra Gupta of National Bureau of Plant Genetic Resources, New Delhi followed it up with a talk on "Production of Medicinal Plants Raw Materials — Innovations and New Challenges". "Scientific Aspects of Pharmaceuticals Envisaged in the Ancient Literatures of Ayurveda" was presented by Dr. Jayaprakash Narayan from Bangalore.

Three parallel sessions of invited lectures were also organised. Dr. Peter P Speiser, Professor Emeritus of Pharmacy, ETH-Zurich, Switzerland delivered a lecture on "Pharmacosomes — An Innovative Minivesicular Therapeutic System". He highlighted that with the tailor made transfer of a hydrophilic drug with lipids into an amphiphilic prodrug, a spontaneous liposomal system in water was formed, which could be considered as a new therapeutic system with better pharmacokinetics and pharmacodynamic properties. Dr. M.S. Roberts, department of medicine, The University of Queensland, Australia discussed the importance of "Drug Design and Skin Physiology in the Development of a Transdermal Drug Delivery System". He explained the importance and application of ionophoresis in transdermal drug absorption. "Antibody Based Targeting of Cytotoxic Agents" was the topic of the lecture delivered by Dr. T. Ghose, Professor of Pathology, Department of Pathology, Sir Tupper Medical Building, Halifax, Nova Scotia, Canada. He stated that his studies had confirmed the ability of antibodies for targeting radionuclides and other cytotoxic agents. Dr. Ravindra C Vasavada, Professor of Pharmaceuticals and Director of Graduate Studies, University of Pacific, Stockton, California, USA delivered talk on "Investigation of

Tobramycin-poly (Ortho-Ester) implantable System for the Treatment of Osteomyelitis". "The Importance of Physico-Chemical Interactions in Medicines Design" was highlighted by Dr. John N Staniforth, Reader in Pharmaceutical Chemistry, School of Pharmacy and Pharmacology, University of Bath, Bath, United Kingdom. The concept of "Targeted Delivery of Drugs" was presented by Dr. R.S.R. Murthy, Professor of Pharmaceutics, Department of Pharmacy, M.S. University of Baroda, Baroda. Dr. Kumar D Mukherjee, Institute for Biochemistry and Technology of Lipids, H.P. Kaufmann-Institute of Federal Centre for Cereal, Potato and Lipid Research, Munster, Germany delivered a talk on "Enzymatically Modified Lipids and Their Potential Applications in Pharmaceutical and Related Biomedical Areas". "Chrono-kinetics of Drugs and Drug Interactions" was discussed by Dr. Ram Bhau, Head of the Department of Pharmaceutics, Kakatiya University, Warangal. Dr. John E Rees, Professor of Pharmacy Practice, University of Bath, Bath, United Kingdom gave a stimulating talk on "Is Pharmacy Practice Taking the Right Directions?". Dr. Prem K Gupta, Former Drugs Controller of India, discussed the "National Drug Policies in Developing Countries — The Indian Experience".

The Pharmacology session commenced with the talk by Dr. Norman George Bowery, Department of Pharmacology, School of Pharmacy, University of London on "Neural Receptors for GABA As Drug Targets". This was followed by a talk by Dr. Dharam P Agarwal, Professor & Deputy Director of Institute of Human Genetics, Medical School, Butenfeld, Hamburg, FRG on "Pharmacokinetic and Pharmacogenetic Basis of Al-

cohol Metabolism and Alcoholism". Dr. S.K. Gupta from All India Institute of Medical Sciences, New Delhi discussed the "Current Developments in the Medical Therapy of Cataract". Dr. Klotz, Professor of Clinical Pharmacology, Robert Bosch Hospital, Stuttgart, Germany spoke on "Drug Interactions — Academic Curiosity or Clinical Challenge?". Prof. Visweswaram, Head of the Department of Pharmaceutical Sciences, Andhra University, Visaka-patnam spoke on "Mechanism of Shock". Dr. S.K. Kulkarni gave a talk on "GABA Receptor Modulation by Herbal Preparation". Dr. P.C. Dandiya spoke on "Psycho-neuro-pharmacology".

In the Pharmaceutical Chemistry session there were invited lecture by Dr. M.N.A. Rao, College of Pharmaceutical Sciences, Manipal who discussed "Free Radicals in Medicinal Chemistry", Prof. T.R. Juneja from Panjab University, Chandigarh gave a lecture on "Drug Metabolism : An Approach to New Drug Discovery" and Dr. B. Gopalan from Glaxo India Limited, Bombay spoke on "Lead Based Design and Development of Oral Hypoglycaemic Agents". Dr. Swaminathan Subramaniam, Visiting Associate, Epilepsy Research Branch, National Institute of Neurological Disorders and Stroke, Bethesda, Maryland, USA spoke on "The NMDA Receptor : Novel Therapeutic Approaches Based on Molecular Mechanisms".

The Indian Local Chapter of Controlled Release Society Inc., was inaugurated on this occasion. Prof. Philip S Low, Department of Chemistry, West Lafayette, IN, USA delivered a lecture on "Non-destructive Delivery of Macromolecules into Living Cells by Vitamin-Receptor-Mediated Endocytosis".

At the valedictory function Prof. C.K. Kokate gave a resume of the scientific activities of the international seminar. He also gave various statistics about the delegates participation, poster presentation and number of the lectures.

## AICTE Enhances Intake Capacity

The All-India Council for Technical Education (AICTE) is reported have allowed a five per cent increase in enrolment capacity for degree courses in technical education institutions for the academic year 1995-96. A similar four per cent increase has been approved for diploma courses.

The AICTE approved 54 (23 degree and 31 diploma) new institutions in engineering, technology and pharmacy for the academic year 1995-96 as per the recommendations made by the central task force. Also approved are 81 (27 degree and 54 diploma) additional courses and increase in enrolment capacity of 36 (12 degree, 24 diploma) existing institutions.

In approving new institutions and increasing the intake capacity, the AICTE has endeavoured to spread the availability of these courses wide by balancing the intake capacity in the different states and regions of the country. Intake capacity has been increased by a maximum of 67 per cent for degree courses in Haryana and by 34 per cent for diploma courses in Jammu and Kashmir. Delhi will have a three per cent increase in degree courses and a 22 per cent increase in diploma courses.

According to Member Secretary Mr. J.P. Gupta, the approvals were finalised after deliberations with state governments, universities, state-level boards of technical

education, regional committees, AICTE bureaus of manpower (NTIMIS) and other relevant educational bodies.

### **Summer University on Human Rights**

World University Service (WUS) India proposes to organise the First Summer University on Human Rights and the Right to Education to be held in Geneva (Switzerland) from 24 July to 11 August 1995. Full sponsorship covering travel, boarding and lodging is available for candidates coming from the developing countries.

World University Service (WUS) and International Organization for the Development of Freedom of Education (OIDEL) have joined their efforts in order to offer a highlevel theoretical and practical training course related to Human Rights with special emphasis on the Right to Education, Freedom of Education and Academic Freedom.

One of the special features of this university will be that, during the training participants will have the opportunity to take active part in the work of the United Nations Sub-Commission on Human Rights and the Committee for the Elimination of Racial discrimination.

Further details may be obtained from Mr Devender Kakar, Executive Secretary, World University Service, R-579, New Rajinder Nagar, New Delhi - 110 060, (India).

### **Faculty Development Programmes at AMU**

The Academic Staff College of the Aligarh Muslim University proposes to organise subject refresher course during 1995-96 on *Geography*: (i) Recent Trends in Social and

Political Geography (24.7.95 to 24.8.95); (ii) Planning for Environmental Management (1.11.95 to 29.11.95); (iii) Recent Trends in Agricultural Geography (11.1.96 to 8.2.96); *History* : (i) Caste, Ideology and Economy in Ancient India (24.7.95 to 24.8.95). (ii) Polity and Culture in Medieval India (7.12.95 to 4.1.96); (iii) Colonialism and Nationalism in India (11.3.96 to 6.4.96); *Mathematics* : (i) Theory of Modulus and its applications (4.9.95 to 30.9.95); (ii) Generalised Functions (11.3.96 to 6.4.96); *Physics*: (i) Laser Physics (1.11.95 to 29.11.95); (ii) Quantum Mechanics (11.1.96 to 8.2.96); *Persian* : (i) Classical Persian Literature (7.12.95 to 4.1.96); (ii) Modern Persian Literature (11.3.96 to 6.4.96); and *Urdu* (i) Urdu Novel (4.9.95 to 30.9.95); and (ii) Urdu Ghazal (Wali to Ghalib) (7.12.95 to 4.1.96).

It is also proposed to organise Orientation Programme in the disciplines of (i) Engineering (June 19 - July 8, 1995); (ii) Business Administration, Law, Economics, Theology, & Islamic Studies (July 24-Aug 24, 1995); (iii) Engineering II (Sept 4-23, 1995); (iv) Pol. Science, History, Psychology Philosophy, West Asian Studies, MIL, MEL, Lib & Information Sc., Journalism, Sociology and Linguistics (Sept 4-30, 1995); (v) English, Urdu, Hindi, Sanskrit, Persian, Arabic, Fine Arts, Music and Home, Science (Nov 1-29, 1995); (vi) Physics, Chemistry, Mathematics, Statistics, Computer Sc. and Geography (Dec 7-Jan. 4, 1996); and (vii) Botany, Zoology, Biochemistry, Wild Life Science, Geology & Education (Jan 11-Feb 8, 1996).

Further details may be obtained from Mr. H.A.S. Jafri, Director, Academic Staff College, Aligarh Muslim University, Aligarh.

### **Modern Technologies for Mineral Assessment and Management**

An International Course on "Modern Technologies for Mineral Resources Assessment and Management" is proposed to be organised at Roorkee by the Indian Geological Congress (IGC). Sponsored by the Association of Geoscientists for International Development (AGID), Department of Science and Technology, Govt. of India, Department of Earth Sciences, University of Roorkee, and National Geophysical Research Institute, Hyderabad, the Course will be held from December 20, 1995 to January 13, 1996 at the Department of Earth Sciences, University of Roorkee, Roorkee.

All geoscientists, mining engineers, university teachers/researchers and other in-service personnel in the mineral and mining sector are eligible for admission to the Course. The Course is also intended for participants from the SAARC, Middle-East, South-East Asia, and developing and under-developed countries of Africa and Latin America.

The objectives of the course are (i) Reaffirming the commitment to sharing advanced technologies in developing and under-developed countries; (ii) To provide opportunity to foreign and Indian earth scientists for acquiring knowledge in the recent developments in mineral assessment and management; (iii) To generate well-documented literature in the subject at an affordable price for developing countries; and (iv) To narrow the gap in knowledge of earth scientists practicing on-site in countries endowed with sizeable mineral wealth but deficient in modern know-how.

The course package will con-



sist of modules on advanced exploration techniques; modernised skills and parameters for the evaluation of mineral resources and management practices for conservation, efficient environment-friendly exploitation methods, and techniques of mineral beneficiation and material handling.

The main themes proposed to be covered include: Mineral resources assessment and concept-based exploration; Field exploration; Remote sensing and digital image processing; Geochemical exploration; Drilling and subsurface exploration; Geostatistics and computer applications; Deposits modelling; GIS and data integration; Mine planning and development; Mineral dressing and processing; Mineral economics and management; and Environmental management.

The Course faculty will comprise experts from various Indian Universities, mineral and mining industry and research establishments. In addition, some foreign experts are expected to deliver thematic lectures in specific fields.

Further details may be obtained from Prof. O.P. Varma, Course Director, IGC, Department of Earth Sciences, University of Roorkee, Roorkee - 247 667 (India).

### **New Courses at SVU**

The Executive Council of the Sri Venkateswara University, at one of its recent meetings, is reported to have resolved to start several courses on self-supporting basis from 1995-96.

Two-year M Sc degree courses in computer science, sericulture and plants and drugs will be started in the S V University College of Arts and Sciences while a

two-year MBA degree course will be started at the SVU Post-Graduate Centre, Cuddapah. Four PG degree courses in MCA, MBA, MSc (Maths) and MA in rural development will be started at PG Centre, Kavali.

According to another decision taken by the Executive Council, the university teachers will be permitted on duty for a maximum of three months when they go abroad on the offer of international reputed fellowships like Rockefeller Foundation, Fullbright Scholar fellowship and so on.

### **Education for Medical Librarianship**

The Medical Library Association of India, in collaboration with All India Institute of Medical Sciences, New Delhi, proposes to organise a National Symposium on "Education for Medical Librarianship in Information Age" in the third week of September 1995 at the All India Institute of Medical Sciences, New Delhi.

The focus of discussion at the symposium would be out Curriculum Design, Course Contents, Teaching Aids, Continuing Medical Library Education, Clinical Librarianship, Hospital Librarianship, Term paper/ Assignments, Internship, and Faculty Development.

There will be a one day workshop on the state of the art in CD-ROM technology along with the symposium. An exhibition of CD-ROM products is also proposed to be organised on the occasion.

Further details may be obtained from Dr. R.P. Kumar, Organising Secretary C/o B.B. Dikshit Library, All India Institute of Medical Sciences, Ansari Nagar, New Delhi - 110 029.

## **60 Cr. for Technology Missions**

The Planning Commission has provided an amount of Rs. 60 crores for the technology development missions, during the Eighth plan period, launched for re-orientation of technical education in tune with the emerging trends.

The areas identified include food processing engineering, integrated design and competitive manufacturing, photonic devices and technology, energy efficient technologies, communication networking and intelligent automation, new materials and genetic engineering and bio-technology.

A steering committee has been set up to monitor the progress.

### **Seminar on Natural Disasters**

The Drought Monitoring Cell (Registered Society of Government of Karnataka), Bangalore, proposes to organise a Seminar on "Natural Disasters — Causes and Management" during October-November, 1995.

The Seminar will focus on all scientific dimensions of the natural disasters of Earthquake, Drought, Flood and Landslides, along with the evaluation of relief measures, hazard mitigation system and their socio-economic impacts.

Further details regarding the seminar may be obtained from Dr. H. Chandrashekhar, Director, Drought Monitoring Cell, 9th floor, BUSSB Building, Bangalore - 560 009.

### **Communal Harmony and National Integration**

A two-day National Seminar on "Communal Harmony and National Integration — India's Hour

(Contd. on page 26)

# VOCATIONALISATION OF EDU

## COURSE OFFERINGS AT FIRST DEGREE I

State	Name of the University	Course →	Advertising, Sales Promotion & Sales Mgmt.	Archaeology & Museology	Biological Tech & Specimen Preparation	Biotechnology	Clinical Nutrition Dietetics	Communicative English	Computer Applications	Computer Maintenance	Electrical Equipment
		↓									
CHANDIGARH	PANJAB UNIVERSITY										
	1. M.C. Mahajan D.A.V. College for Women, Sector 36 A, Chandigarh		-	-	-	-	-	✓	✓	-	-
	2. G. G. D. S. D. College Chandigarh		✓	-	-	✓	-	-	✓	-	-
	3. Sri Guru Gobind Singh College, Chandigarh		-	-	-	-	-	✓	-	-	✓
PUNJAB	4. G. H. S. Khanna College, Gurmukh Sadhar, Ludhiana, Punjab		-	-	-	-	-	-	✓	-	-
	5. R.S.D. College, Ferozepur City, Punjab		-	-	-	-	-	-	✓	-	-
	6. Khanna College for Women, Civil Lines, Ludhiana, Punjab		-	-	-	-	✓	-	-	-	-
	7. D.A.V. College, Abot, Punjab		-	-	-	-	-	-	✓	-	-
RAJASTHAN	M.D. SARASWATI UNIVERSITY										
	1. R.R. Autonomous College, Ajmer, Rajasthan		-	-	-	-	-	-	-	-	-
	2. Shree Satya Sai College for Women, Jaipur, Rajasthan		-	-	-	-	-	-	✓	-	-
	3. Govt. College, Ajmer, Rajasthan		-	-	✓	-	-	-	✓	-	-
	4. S.M.M.S. Girls College, Bhilwara, Rajasthan		-	-	-	-	-	-	✓	-	-
	5. Durgar College, Bikaner, Rajasthan		-	-	-	-	-	-	✓	-	-
	6. M.S.J. College, Bhilwara, Rajasthan		-	-	-	-	-	-	✓	-	-
	7. Shri M.L.V. College, Bhilwara, Rajasthan		-	-	-	-	-	-	✓	-	-
	8. Govt. College, Kota, Rajasthan		-	-	-	✓	-	-	✓	-	-
	9. Lohar College, Churu, Rajasthan		-	-	-	-	-	✓	-	-	-
	10. Govt. College, Deodhara, Rajasthan		-	-	-	✓	-	-	✓	-	-
	11. J.D. Bangor Girls College, Kota, Rajasthan		-	-	-	✓	-	-	-	-	-
	12. SMMS Govt. Girls College, Bhilwara, Rajasthan		-	-	-	-	-	-	✓	-	-
	13. Savita College, Ajmer, Rajasthan		-	-	-	-	✓	-	-	-	-
	UNIVERSITY OF RAJASTHAN										
	1. University Maharaja's College, Jaipur, Rajasthan		-	-	-	-	-	-	-	-	-
	2. Vinodra Mahavidyalaya Khetri, Rajasthan		✓	-	-	-	-	-	-	-	-
UTTAR PRADESH	AGRA UNIVERSITY										
	1. Bahwan Vidyapeeth Rural Instt. Bahpur, Agra, U.P.		-	-	-	-	-	✓	-	-	-
	UNIVERSITY OF ALLAHABAD										
	1. Ewing Christian College, Allahabad, Uttar Pradesh		-	✓	-	-	-	-	-	-	-
	UNIVERSITY OF GORAKHPUR										
	1. Uda Pratap College, Varanasi, U.P.		-	-	-	-	-	-	-	-	-
	ROHILKHAND UNIVERSITY										
	1. Hindu College, Moradabad, U.P.		-	-	-	-	-	-	-	-	-
	2. Bareilly College, Bareilly, U.P.		✓	-	-	-	-	-	-	-	-
	3. R.S.M. College, Dhanpur, U.P.		-	-	-	-	-	-	-	-	-
	4. Gandhi Smarak Degree College, Moradabad, U.P.		-	-	-	-	-	-	-	-	-

Source: University Grants Commission, New Delhi.

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**JUNE 5, 1995**

(Contd. from page 23)

of Need" was recently organised at Sri Venkateswara University under the auspices of Departments of Sociology, Political Science and Public Administration. Attended by 31 participants from different universities, the seminar was presided over by Prof. Ranganatha Babu, Registrar, S.V. University. Shri Rami Reddy (Retd I.A.S), Former Chairman, APSIDC delivered the keynote address. Dr. G. Stanly Jaya Kumar, Director of the Seminar presented the theme paper.

The various themes discussed at the Seminar included (i) Role of Religion and National Integration; (ii) Terrorism; (iii) Police - Public Relations; (iv) Role of Bureaucracy and Administration; (v) Role of Gender; (vi) Role of Visual Publicity and Media; and (vii) Role of Literature, Curriculum & Culture.

### **Engg College for Radaur**

The management of the Mukand Lal institutions has decided to set up an engineering college at Radaur in Yamunanagar district. Necessary approval had already

been received in this behalf from the All-India Council for Technical Education, New Delhi.

According to Dr Ramesh Kumar, Principal of Mukand Lal National College, Yamunanagar, admissions will be held through a common entrance test conducted by Regional Engineering College, Kurukshetra, and classes at the Seth Jai Parkash Mukand Lal Institute of Engineering and Technology will start on August 1, 1995.

He said that three courses — bachelor of engineering in computer applications, in electronics and in mechanical engineering with 60 seats in each category — would be conducted.

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### **We Congratulate...**

**Dr. A.G. Sawant, Vice-Chancellor, Konkan Krishi Vidya-peeth, Dapoli who has won the "National Extension Education Fellow Award" of the Indian Society of Extension Education, for his significant contributions in the field of agricultural extension.**

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university had agreed to offer consultancy in monitoring the seed production programme to private agencies by charging a nominal fee of rupees two hundred per acre. He said that during the last six months, the university had earned rupees four lacs by testing the efficacy of agro-chemicals viz. pesticides, weedicides and other chemicals manufactured by private sector or institutes.

Dr. Arya said that besides imparting technical know-how of the development of these improved seeds to the private agencies, special training programmes would also be organised at the main campus, Krishi Vigyan Kendras and Regional Research Stations. He hoped that with the implementation of this novel scheme, there would be no dearth of quality seeds in the State of Haryana.

### **Parmar Varsity Convocation**

"Our economic future is inextricably linked with optimal utilization of our land resources, be it with forest or horticulture species, so that we could satisfy local needs, generate employment and also create surpluses for export", said Mr Kamal Nath, Union Minister for Environment and Forests while delivering the convocation address at the 3rd convocation of Dr YS Parmar University of Horticulture & Forestry, Solan recently. He said that Wastelands, which constituted over half of our geographical area, could be gainfully utilized for producing a variety of goods—timber, fuel, fodder, fruits, flowers, medicinal and ornamental plants and the like, as well as assist in the conservation of our bio-diversity.

In developing countries the expansion of industry and agro-industry was necessary to meet the

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## **News from Agricultural Universities**

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### **HAU Linkages for Seed Distribution**

To meet the day-to-day increasing demand for the breeders seeds of improved crop varieties as also to strengthen its financial resources, Chaudhary Charan Singh Haryana Agricultural University (CCSHAU) has adopted a novel approach of strengthening linkages with the private seed agencies. This was revealed by Dr. S. Arya, Vice-Chancellor who said that this had been done with the ultimate motives of large scale seed multiplication of the varieties developed by

CCSHAU and also to mobilise funds from the private sector. He said that presently this endeavour had been initiated for cotton and rice crops of kharif and for wheat, gram and raya crops of rabi season.

Dr. Arya said that so far the University had been supplying seeds only to the State and Central Seed Agencies. From now onwards the university would provide technical know-how to the private agencies as well. He said that the



challenge of poverty. But this development must not follow the path that caused severe degradation of the environment and heavy social costs as witnessed in the industrialised economics of the world, he added. India must look for "clean" technologies in place of "cleaning up" technologies, he suggested.

Mr. Kamal Nath called upon the young horticulture & forestry graduates not to look for government jobs alone, but more importantly, to render the scientific skill in private industry and in their villages for generating self employment and clean environment. He said that like allopathic and veterinary doctors the concept of "Tree Doctors" in a hilly state held a great deal of promise, particularly in the rural and hilly areas.

The environment minister clarified that the union govt would permit only those cement plants & other mineral based industries which did not cause ecological and environmental degradation. He informed that a high level committee had been set up to scrutinise all future proposals for setting up cement projects in the state.

In his report Prof. LR Verma, Vice Chancellor, explained the various teaching, research and extension activities of the university. Prof. Verma wanted that the proposed Central Forestry Research Institute at Shimla by ICEFRE should be shifted to the University as it overlapped its mandate. He clarified that any new institution took at least 10 years to deliver the results. If the aforesaid responsibility was passed on to this university, it would not only strengthen the existing infrastructure for meeting the objectives of sustainable management of Himalayan eco-system, but will also eliminate the long gesta-

tion period of implementing the national mandate. Union Minister of environment accepted the demand in principle.

Chancellor of the University and Governor of Himachal Pradesh Shri Sudhakar Rao Naik awarded degrees to 311 students of the university. Eight gold medals were also given on this occasion.

### **TNAU Schemes for Self-employment**

The Tamilnadu Agricultural University proposes to organise an entrepreneurial development programme in five selected areas, namely, mass multiplication of bio-control agent, mushroom production, and recycling of agro-wastes to provide self-employment opportunities, develop entrepreneurship among the unemployed graduates, and school drop outs, and to promote agro-based biological inputs.

The TNAU proposed to intensify the training programme on the specialised areas like organic farming, commercial agriculture, seed production of hybrid rice, fruits and vegetables processing and preservation and recycling of agro-wastes to meet the needs of the clientele groups.

It also proposed to organise vocational agriculture through the correspondence courses for the benefit of school drop outs to promote self employment opportunities apart from production of video

cassette lessons on technologies and establishment of video village concept for communicating to the TNAU through cable television network.

### **New Crop Varieties**

The Chaudhary Charan Singh Haryana Agricultural University (CCSHAU) has developed and released seven high yielding and disease resistant new varieties. These include American cotton hybrid HHH-81 (Dhanlaxmi), Desi cotton variety HD-107, Sugarcane variety CoS-56, Vegetable crop variety HC-28 and EC-44 of red chillies, HRG-14 of ridge-gourd and HD-18 of Indian bean (Sem). Two spice crop varieties viz. HD-5 of Coriander and HM-56 of Methi have been released by the Indian Council of Agricultural Research (ICAR). According to Dr. S. Arya Vice-Chancellor in comparison with the earlier developed varieties of these crops, new varieties are undoubtedly superb in their yield and disease tolerant qualities.

The Vice-Chancellor said that by testing and conducting survey at farmers' fields and through test trials, CCSHAU scientists had identified varieties HRK-46 of rice, H-1117 and HS-182 of American cotton, Haryana Chari No. 6 and HGS-365 of guar for general cultivation. The rice variety HKR-46 is high yielding, early maturing and suitable for early sowing and also for rice-wheat cropping system.

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## **News from UGC**

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### **Countrywide Classroom Programme**

Between 15th June to 30th June, 1995, the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The Programme

is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

1st Transmission 6.00 a.m. to 7.00 a.m.	2nd Transmission 1.00 p.m. to 2.00 p.m.	"He Who Directs" "The Week Ahead"
<b>15.6.95</b>	<b>15.6.95</b>	<b>25.6.95</b>
"Optical Repeaters" "The Indian Tribes" "Understanding Shelly - Part III : Ode to a Skylark"	"Artificial Intelligence and Cognitive Science" "Making of a Newspaper - Part II : Reporting" "A World of English - Part 6 : Group Discussion - II"	No Telecast
<b>17.6.95</b>	<b>16.6.95</b>	<b>26.6.95</b>
"Solar Cells for Space Applications" "Bandhej - The Art of Tie and Dye" "Why do People Avoid Each Other"	"Concretising Algebra - Part I" "Vitamin A - The Eye Factor" "The Changing Nature of a Wetland"	"S.N. Bose - The Scientist with a Mission" "Consumer Protection"
<b>18.6.95</b>	<b>17.6.95</b>	<b>27.6.95</b>
"Modern Painting and Salvador Dali" "The Potato Eaters - Part I" "The Week Ahead"	"Thresholds" "Vision Beyond Sight" "The Week Ahead"	"Fluorosis - A Threat" "The Beginning of a New Movement" "Oxygen Radicals and Antioxidants - Part VIII : Oxygen Free Radicals and Environmental Pollution"
<b>20.6.95</b>	<b>18.6.95</b>	<b>28.6.95</b>
"Question Time" "Heritage India - Part 4: Buddhist Architecture in Andhra Pradesh" "Basic Biotechnology"	No Telecast	"The Gene Story" "Values of Reading" "Iron in the Cells"
<b>22.6.95</b>	<b>19.6.95</b>	<b>29.6.95</b>
"The World of Complex Compounds" "Understanding the Cerebral Palsied Child" "Indian Literary Sensibility"	"Question Time" "Excitement of Pulsars - Part II" "Groundnut Production : Improved Technology for Higher Yields - Part II"	"Keeping the Tracks Fit - Part II" "Making of a Newspaper - Part IV : Newspaper Structure" "A World of English - Part 8 : Talk about Town"
<b>24.6.95</b>	<b>20.6.95</b>	<b>30.6.95</b>
"Tennessee Williams - The Human Dramatist : 'The Glass Menagerie Revisited - Part I'" "Career Counselling : Performing Arts" "Protection of Japanese Crested IBIS"	"Micro Biological Examination" "Theatre Exercises" "Oxygen Radicals and Antioxidants - Part VII : Role of Oxygen Radicals in Fever"	"Geometry Made Simple" "Let Freedom Be"
<b>25.6.95</b>	<b>21.6.95</b>	<b>Hindi Telecast</b>
"Art During Renaissance" "The Potato Eaters - Part II" "The Week Ahead"	"Scientific Toys" "Ancient Egypt - The Valley of the Nile" "Plasma Membrane - Part II"	प्रातः 6.00 से 6.30 बजे तक
<b>27.6.95</b>	<b>22.6.95</b>	<b>16.6.95</b>
"The Physics of Music : The Magic Flute" "Heritage India - Part 5: Contemporary Society" "Lifeline"	"Keeping the Tracks Fit - Part I" "Making of a Newspaper - Part III : News and Views" "A World of English : Part 7 : Say it with Flowers"	"संगीत गणित - भाग-4" <b>19.6.95</b> "केरला कला - कथकलि" "एक नई दिशा"
<b>29.6.95</b>	<b>23.6.95</b>	<b>21.6.95</b>
"Flocculation" "Bhavai - The Folk Drama of Gujarat" "The Growth of a Poet : William Wordsworth - Part I"	"Concretising Algebra - Part II" "Trinidad and Tobago - A Dialogue in Development"	"समुद्री आंधी विरोधी ग्रामीण घर" "इट्स नेवर टू लेट"
	<b>24.6.95</b>	<b>23.6.95</b>
	"Musical Notes and their Origin"	"सृजनहार"
		<b>26.6.95</b>
		"रेगिस्तान में कालासोना - भाग-1"
		<b>28.6.95</b>
		"रेगिस्तान में कालासोना - भाग-2"
		<b>30.6.95</b>
		"कुसुमित केकटस : मेसेम्ब लिघेन"

## BOOK REVIEW

### Inadequate—Though Ambitious

Sandwip Kumar Das\*

**Francis Cherunilam. International Economics. Second Edition. New Delhi, Tata McGraw-Hill, 1994. Pp. viii + 431. Price Not Stated.**

The state of affairs in the today's world economy is extremely fluid and one witnesses a situation in which new concepts and practices are emerging continuously in international business and finance. The Uruguay Round Final Act will gradually alter the legal and institutional framework under which the nation states have conducted business with each other so far. In addition to all this, many developing countries are becoming increasingly aware of the need to integrate their economies with the world economy, so that they can become more efficient in accordance with their respective comparative advantage and, at the same time, ensure that the national interest is promoted in the multilateral negotiations.

It is extremely important for the student of international economics to follow the pattern of these developments and have a grasp over the conceptual and theoretical innovations. This is not an easy task. Cherunilam's book has a great deal of material on the various issues currently being debated in the academia. Some of these issues which have been discussed in the

book are : Economic Integration, Multinational Corporations, Transfer of Technology, International Debt Problem, International Liquidity, Trade in Services, and International Capital Flows. While the students of business management may find this book quite informative, many current developments and controversies seem to have been left out. For example, North American Free Trade Agreement has received a brief mention, while APEC has been totally ignored. Similarly, all debates relating to intellectual property rights and agricultural subsidy are missing in the book, though the Appendix gives the main provisions of the Uruguay Round Final Act. There is, however, a section on how the Uruguay Round Final Act is going to affect India, but the author has mainly depended on newspaper articles to resolve this issue. The level of treatment in the case of the other issues is more or less the same. The reading materials, cited

at the end of some chapters, are not recent enough and in most cases the year of publication has not been mentioned.

The book has also included some traditional and, in some cases, obsolete issues. These are : State Trading, Countertrade, Euro-dollar Market, Official Development Assistance, etc. Among these, the chapter on State Trading is well-written. The rest are extremely sketchy.

The rest of the book can be divided into two parts : one part dealing with trade theories and the other part (last four chapters) with India's trade and trade policies. The second part, though short, has been based on current sources of data and contains all the relevant changes in export and import policies.

As regards trade theories and balance of payments, the author's exposition is competent but too concise. Without the help of supplementary readings it will be extremely difficult for the student to have a sound understanding of the basic theoretical concepts. For example, the treatment of community indifference curves (chapter 2), a very basic analytical tool used in both trade theory and welfare, is restricted within definitions and

### University News

intends to create a panel of book reviewers in different subjects. University and College teachers interested in reviewing books for *University News* may please write to the Editor indicating their specialisation.

\*Professor, School of International Studies, Trade and Development Division, Jawaharlal Nehru University, New Delhi-110 067.

quotations from Kaldor. The alternative approach developed by Samuelson to evaluate the gains from trade has not been discussed. Another basic tool, namely, the offer curves, lacks formal treatment, as the underlying conflict between the income effects and the substitution effect has not been explained. As a result, the possibility of 'backward bending' in the offer curve along with the instability of trade equilibrium has been ignored. The Heckscher-Ohlin theorem (chapter 3) has not been logically derived and the role of the various assumptions, such as constant returns to scale, has not been fully clarified. The Keynesian open economy model (chapter 5) deals basically with the foreign trade multiplier. All other issues in open economy macro economics incorporating the money, asset and labour markets have been left out. There is a short chapter on trade in services which will be useful to the readers and the chapters on trade and development summarise the basic issues such as the Prebisch-Singer hypothesis. There is, however, no discussion on the recent developments in trade theory where imperfection in the market structure and scale economies have been introduced.

One must grant the author the credit of bringing out a book on international economics which contains both theory and current issues. The task is an ambitious one and the author has been partly successful in this task. The quality of the book can be improved immensely if the inquisitive readers are directed to recent works in trade theories and current controversies in various issues in trade and international investment by supplying an up-to-date bibliography. This, if done properly, will amount to a significant addition to knowledge in the subject.



# ENGINEERING COLLEGE

Rawatbhata Road, Kota-324 010

(An autonomous institution of Government of Rajasthan)

F(5)2/4/95

Date: 20.5.95

Applications are invited on the prescribed form for the following posts:

S.No.	Name of the post & Pays Scale	No. of post
<b>PROFESSOR (Rs. 4500-7300) AICTE Norms</b>		
	1. Electrical Engineering	1
	2. Computer Engineering	1
	3. Electronic-Instrumentation & Control	1
	4. Mechanical Engineering	1
	5. Production & Industrial Engineering	1
	6. Physics	1
	7. Chemistry	1
	8. Industrial Liaison and Training	1
<b>READER (Rs. 3700-5700) AICTE Norms</b>		
	1. Electrical Engineering	4
	2. Electronics & Communication	3
	3. Electronic-Instrumentation & Control	3
	4. Computer Engineering	1
	5. Humanities	1
<b>LECTURER (Rs. 2200-4000) AICTE Norms</b>		
	1. Electrical Engineering	4
	2. Computer Engineering	1
	3. Electronics & Communications	1
	4. Production & Industrial Engineering	1
<b>FOREMAN (Rs. 2200-4000)</b>		
	Mechanical/Production & Industrial/Electrical)	2
<b>DEPUTY REGISTRAR (RS. 2500-4250)</b>		1
<b>LIBRARIAN (RS. 2500-4250)</b>		1
<b>ASSISTANT REGISTRAR (RS. 2200-4000)</b>		1

Details of specialisation and qualifications required and terms and conditions may be obtained from the college by sending an Indian Postal Order of Rs. 25/- for general and Rs. 12.50 for SC/ST candidates payable to the Registrar, Engineering College, Kota alongwith the applications and a self addressed envelope 11" x 5" having a stamp of Rs. 2/-.

For each post candidate should apply separately. Those who have applied earlier for the posts should apply again. SC/ST candidates shall be considered for selection as per rules. Applications duly filled should reach the Registrar, Engineering College, Kota-324 010 by 30.6.1995.

**REGISTRAR**



## NET and Academic Standards

Mishra claims that the objective of the NET is *not* the selection of candidates who become better researchers and teachers but only to identify academically excellent candidates, and to impart national uniformity to selections (*University News* 3 April 1995, p 35). But contrary to the claim of Mishra and others (Bhatnagar, Jain, and Sethumadhava Rao), the UGC says that it has the responsibility to maintain and upgrade the academic standards in the universities, and it has introduced the NET for this purpose (*UGC Annual Report* 1985 Page 15 and 19, and the Bombay High Court Writ Petition No. 2071 of 1988—*UGC Affidavit* para 4, 10 and 32).

However let us assume for the sake of argument that the NET allows identification of academically excellent candidates. But if such NET qualified candidates turn out to be mediocre researchers and teachers, is the use of the NET justifiable? The imposition of the NET is based on unstated and unproved assumption by the UGC and the learned judges of the Supreme Court that the NET qualified candidates become better researchers and teachers than others. Another justification for the imposition of the NET is that it imparts national uniformity to selections. But will its use be justifiable if it identifies candidates who uniformly become mediocre researchers and teachers?

Only the urban middle and upper class is uniform in this country. Otherwise there is very high geographical, social, occupational, economic and political diversity in this country. This diversity has to be reflected in the researchers and the teachers if they are to serve the research and teaching needs of all the diverse groups in the country. Just

as the biological diversity is essential for sustainable agriculture, diversity (including that in eligibility conditions) in research and education is essential for sustaining a society consisting of highly diverse groups.

Just as a municipal corporation should not add a chemical to the drinking water only on faith and without having good evidence of its usefulness, similarly the UGC should not impose the NET only on faith and without having good evidence to show that it helps significantly to upgrade and maintain academic standards. If the academic excellence measured by the NET is not strongly related to the excellence in research and teaching, then the UGC's imposition of the

NET on the universities is not justifiable. Given the knowledge, skills and the values tested by the NET, the UGC's imposition (and the Supreme Court's approval) of it is likely to produce an uniform army of mediocre researchers and teachers.

The UGC's unwillingness to find out if the use of NET is helping to upgrade or degrade the standards of research and teaching in the universities, and its refusal to give necessary statistical data to others raises the doubts about its motives in imposing the NET on universities.

Pichare, M.M.  
Scientist,

Walsangi-413514

TA. Ahmedpur, Dist. Latur  
Maharashtra



SHRI LAL BHADUR SHASTRI  
RASHTRIYA SANSKRIT VIDYAPEETHA  
KATWARA SARA NEW DELHI - 110016

Applications are invited on the prescribed form for the following vacant post to be filled on deputation / contract / direct recruitment basis.

### TEACHING

- |                               |           |                             |
|-------------------------------|-----------|-----------------------------|
| 1. Reader (Rs. 3700 - 5700)   | 2 Posts   | (i) Advait Vedanta - 1 Post |
|                               |           | (ii) Vyakeran - 1 Post      |
| 2. Lecturer (Rs. 2200 - 4000) | 4 Posts   |                             |
| (i) Hindustani Music (vocal)  | - 1 Post  |                             |
| (ii) Shiksha Shastra          | - 2 Posts |                             |
| (iii) Jain Darsan             | - 1 Post  |                             |

### NON TEACHING

- |                                   |          |
|-----------------------------------|----------|
| 1. Cataloguer (Rs. 1200 - 2040)   | - 1 Post |
| 2. Junior P. A. (Rs. 1400 - 2300) | - 1 Post |
| to V. C.                          |          |

RESERVATION :- 15%, 7.5% & 27% of the posts are reserved for SC, ST & OBC Candidates as per rule.

Prescribed application forms alongwith general information and instructions can be had from the Registrar on payment of Rs. 10/- for each form either in cash on counter or by Rs. 20/- by demand draft payable in any Nationalised Bank in Delhi/ New Delhi and drawn in favour of Shri Lal Bahadur Shastri Rashtriya Sanskrit Vidyapeetha New Delhi - 110016.

Application forms are available free of cost to the applicants belonging to SC/STs.

The last date for the receipt of duly filled in application is 20.6.95.

DR. SHRIDHAR VASISHTHA  
REGISTRAR



# UNIVERSITY OF DELHI

DELHI- 110007.

Advt. No. Estab.IV/142/95

Dated : 27 May 1995

Applications on the prescribed forms are invited for the following posts in various Departments of the University so as to reach the REGISTRAR, UNIVERSITY OF DELHI, DELHI - 110007 latest by 28 June, 1995.

## S. Department/Post (No. of Posts)/ No. Specialization desired

1. **African Studies Reader (1)** African Sociology. **Lecturer (4)** One each in Sociology/Political Science/History/Geography. Knowledge of an African Language desirable for Reader and Lecturer both.
2. **Anthropology Reader (1)** Social Anthropology Evidence of fieldwork in tribal societies with specialization in Kinship studies/economic studies, cultural change studies. **Lecturer (5)** 3 posts under DSA upto 30.9.95 likely to continue. Pre-historic Archaeology/Forensic Science.
3. **Botany Professor (3), Lecturer (1)** Algae and/or Archegonatae
4. **Buddhist Studies Lecturer (3)** For post 1: Classical & Modern Chinese Language & Chinese Buddhist Literature; For post 2: Tibetan Language & Literature at the PG level.
5. **Chemistry Reader (2)** Any area of specialisation in Inorganic/Organic or in any of the following branches of Physical Chemistry (quantum chemistry/statistical mechanics/biophysical chemistry/chemical kinetics/solid state chemistry). **Research Associate (1)** Inorganic Chemistry.
6. **Chinese & Japanese Studies Professor (1)** Chinese History/Chinese Economics. **Reader (1)** Chinese History/Chinese Economics/Chinese political Geography.  
**Lecturer (1)** Foreign Policy of the People's Republic of China; **Research Associates (4)** Chinese politics/Chinese History; (proficiency in Chinese Language with a proven ability to use primary sources in Chinese Language desirable for all the above posts).  
**Reader (1)** Japanese Economy/Japanese Society/Japanese Political/Japanese History. **Lecturer (1)** (a) should have cleared Level 1 examination in Japanese Language Proficiency Test conducted by the Japan Foundation. (b) should have experience in teaching Japanese language using Audio-visual methods. **Research Associates (2)**: Japanese Politics/Japanese History (Proficiency in Japanese language with a proven ability in handling primary sources in Japanese language for all the above posts).
7. **English Professor (1).**

8. **Economics Professor (2), Reader (2), Lecturer (6), Research Associate (2).**
9. **Education Reader (1)** Language Education/Science Education; **Lecturer (10)** One each in Teaching of Biological Sciences/History/Hindi/Philosophy of Education/Political Science/Commerce/Art/Sociology/Physics/Educational Planning & Admn.
10. **Germanic & Romance Studies Lecturer (2)** One in German Language and German literature; and the other in Spanish language and Hispano-American Literature.
11. **Hindi Professor (1), Reader (2);** Linguistics and Hindi Language; **Lecturer (1)** Teaching Hindi as a second language.
12. **Law Reader (1), Lecturer (1).**
13. **Linguistics Reader (1)** Sociolinguistics with a good background in theoretical linguistics and language teaching.
14. **Mathematics Reader (1)** Algebra.
15. **Modern Indian Language Reader in** Gujarati (1), **Reader in** Kannada (1) **Lecturer in** Malayalam (1), **Lecturer in** Tamil (1), **Lecturer in** Telugu (1), **Lecturer in** Kannada (1) (Leave Vacancy - Temp. upto 5.1.1997). Comparative literature and knowledge of an additional Indian Language for all these posts is desirable.
16. **Music Reader (1)** Karnatak Vocal; **Lecturer (2)** Karnatak Vocal
17. **Psychology Reader (1)** Organisational Behavior **Lecturer (2)** Clinical Psychology/Cognitive Psychology
18. **Political Science Lecturer (1)** Political Theory.
19. **Physics Professor (2), Reader (4), Lecturer (1)**
20. **Sanskrit Lecturer (1)**
21. **Social Work Lecturer (2)** Teaching/work experience/Field work in Human Growth & Development, Field of Social work.
22. **Urdu Reader (3), Lecturer (2)**
23. **Zoology Lecturer (2)** Development Biology/Animal Physiology/Insect Toxicology/Insect Physiology/Chronobiology/Parasitology

Scale of Pay : Professor Rs. 4500-150-5700-200-7300; Reader Rs. 3700-125-4950-150-5700; Lecturer Rs. 2200-75-2800-100-4000. **Research Associate** : In one of the following grades depending on the recommendations of the Selection Committee: Rs. 2800-3000; or Rs. 3300-3800 or Rs. 3750-4375 or Rs. 4325-5000.

All the above posts, except that of Research Associate, carry DA, CCA, HRA etc. as admissible under the rules in force in the University from time to time

## Ref. Advt. No. 138 & Advt. No. 139

Applications are also invited for the following posts which had earlier been advertised vide advt. No. 138 (13.2.1994) and Advt. No. 139 (19.8.1994). Persons who have applied earlier need not apply again but they will be considered only as per revised essential qualifications which can be obtained from the address given below.

**Professors** : Anthropology (1), Buddhist Studies (1), Chemistry (5), Computer Science (1), Economics (2), Education (1), Law (3)\*, Music (1) Karnatak, Operational Research (1), Persu (1), Philosophy (1), Political Science (1), Psychology (1), Sanskrit (1), Sociology (1), Social Work (1).

**Readers** : Anthropology (2), Chemistry (5), Commerce (1), Economics (5), Education (1) English (1), Geology (2)\*, Germanic & Romance Studies (2-Italian), Hindi (2), Law (7), Library & Information Science (1), Linguistics (1), Management Studies (1), ML (1 - Bengali), Music (1 - Karnatak Vocal), Punjabi (1), Social Work (2), Urdu (1).

\* One post is upto the end of the 8th plan

\* Two posts under DSA upto 30.11.95 (likely to continue)

Application forms for various posts and details regarding prescribed qualifications can be had from the Establishment-IV (Room No. 205) New Administrative Block, University of Delhi, Delhi - 110007 during working days (from 9.30-12.30 p.m. and 2.00-5.00 p.m.) either personally or by sending a self addressed & postage stamped envelope worth Rs. 8/- (size 13 cms. x 28 cms)

## NOTE :

1. For Lecturer in each subject one out of 5 posts (atleast one) is meant for candidates belonging to SC/ST; if no suitable candidates is available the post will be filled-up by appointing any other suitable candidate.
2. 3% posts of Lecturer are reserved for physically handicapped candidates.
3. For Professor & Reader, other things being equal preference will be given to SC/ST candidates.
4. It will be open to the University to consider names of suitable candidates who may not have applied.
5. Number of posts is given within parenthesis against each post.
6. University reserves the right not to fill up any of these posts advertised.
7. Relaxation of any of the qualifications may be made in exceptional cases on the recommendation of the Selection Committee.

(PROF. S.K. WASAN)  
REGISTRAR

# THESES OF THE MONTH

## A list of doctoral theses accepted by Indian Universities

### HUMANITIES

#### Philosophy

1. Jagannatham, A. A critical study of Hermeneutics as a philosophical method. Osmania. Prof H N Singh, Department of Philosophy, Osmania University, Hyderabad.

#### Fine Arts

#### Music

1. Dhamankar, Vijaya. Goswami Tulsidas ke geetikavya mein nihit sangit tatva. Devi Ahilya. Dr Suman Dandekar, 30, Jati Colony, Indore.

2. Nishchinta. Mansik rog 'monovikahiptata' mein saangeet chikitsa ke sambhavnayen evam upadeyata. Kurukshetra.

#### Language & Literature

#### English

1. Beuria, B. Edgar Allan Poe : A critical reappraisal of his poetry with special reference to his poetic principles. Gauhati. Dr P Kotoky.

2. Buwa, Balkrishna Shankarrao. A critical study of the novels of William Styron. Shivaji. Dr C J Jahagirdar, Prof and Head, Department of English, Shivaji University, Kolhapur.

3. Chandra, Nanki Dau. Cleanth Brooks and the crisis of new criticism : From formalism to post-modernism. Ghasidas. Dr R S Rai, Prof, Govt Arts and Commerce College, Bilaspur.

4. Mehrotra, Rachna. Influence of Indian culture on the writings of Jawaharlal Nehru. Durgavati. Dr S B Shrivastava, Department of English, Ram Durgavati Vishwavidyalaya, Jabalpur.

5. Parkhi, Anil Shantaram. A critical assessment of George Orwell's non fictional writings and speeches. Shivaji. Dr P B Patil, Reader, Department of English, Shivaji University, Kolhapur.

6. Purkayastha, Juthika. The later novels of William Golding : A study of content and form. Gauhati. Dr P Kotoky.

7. Rawat, Mahua. Discourse of interpersonal communication behaviour in Japan : A semiotic analysis of sociological texts. JNU. Prof H S Gill, Centre of Linguistics and English, Jawaharlal Nehru University, New Delhi.

8. Sahore, Geeta. Theme of renunciation in Henry James's the Portrait of a Lady, The Wings of the Dove, The Spoils of Poynton, The Ambassadors and The Golden Bowl. Kurukshetra.

9. Syed Samiullah. Moral vision in the Holocaust fiction of Elle Wiesel. Kakatiya. Prof P Shivkumar, Department of English, Kakatiya University, Warangal.

10. Varma, Manjula K. A voyage into self : A study of Ellen Glasgow's novels. Gujarat. Dr Amina Amin, School of Languages, Gujarat University, Ahmedabad.

11. Vasudeva, Shyama. Circles of bondage : A study of black woman in the fiction of Alice Walker. Dayanand Rohtak.

12. Vora, Trupti Chetan. The Bhagvat Gita and the divine comedy as philosophical poems : A comparative study. Gujarat. Dr R A Malagi, School of Languages, Gujarat University, Ahmedabad.

#### Sanskrit

1. Gathwala, Raj Bala. Contribution of Rishi Vishwamitra to Vedic culture and epical mythology. Dayanand Rohtak.

2. Khute, Itwari Ram. Bharat natyashastra ke samajik evam sanakritik anusheelan. Ravishankar. Dr V K Kanhe, Govt DSV Sanskrit College, Raipur.

3. Rama Rao, D R. Aspects of grammatical theory construction in the Ashtadhyayi. Bangalore. Dr B S Ramakrishna Rao, Director, Bharathiya Vidya Bhavan Crater 525, Pedregal De San Angel, Mexico.

4. Rath, Pramananda. A study of the commentaries of Anandatirtha and Jayatirtha on Srimalad Bhagavatgita. Kurukshetra.

5. Shivakumaraswamy, C. A critical study of Govinda Thakura's Kavyapradipa on Kavyaprakasa. Bangalore. Dr M Sivakumaraswamy, Department of Sanskrit, Bangalore University, Bangalore.

6. Singhal, Neelam. The concept of Maya in pre-Sankara philosophy. AMU. Prof S R Sarma.

7. Srinivas, P. Kosa literature in Sanskrit : A study. Osmania. Prof Nalini Sadhale, Department of Sanskrit, Osmania University, Hyderabad.

#### Hindi

1. Baljeet Kaur. Sumitranandan Pant ke akhyanak kavya ke anusheelan. Ravishankar. Dr (Smt) Maya Arora, Principal, Govt Girls College, Durg.

2. Chaudhary, Mahesh Chandra. Samkaleen Bhartiya sahitya ke pramukh pravrittiyan : Mukhya sandarbh samkaleen Bhartiya sahitya mein prakasit kritiyan. JNU. Prof K N Singh, Centre of Indian Languages, Jawaharlal Nehru University, New Delhi.

3. Desh Raj. Makhan Lal Chaturvedi ke kavya mein rashtriyata ke abhivyakti. HP.

4. Maniyar, Asha Snehal Kumar. Jal Shankar Prasad ke sahitya mein prem tatva. Shivaji. Dr K P Shaha, Himali, 73 Ambai Defence Colony, Sagarmal, Kolhapur.

✓ 5. Nadaf, A Aziz Babulal. Gazal rachana tantra : Hindi, Urdu, Marathi gazalon ke sandarbh mein. Shivaji. Dr D K Gaikwad, Reader and Head, Department of Hindi, Shri Shivaji Mahavidyalaya, Barsi.

6. Nadaf, Doulati Chandulal. Hindi ke atitonmukhi natakon mein vartman jeewan sandarbh. Shivaji. Dr G S Surve,

Reader and Head, Department of Hindi, Lal Bahadur Shastri College, Satara.

7. Patel, Ambalal Jivanlal. *Premchand ke parampara ka pariprekahya mein Nagarjun ke upanyason ka anusaheelan*. Gujarat. Dr M D Chauhan, School of Languages, Gujarat University, Ahmedabad.

8. Prema Kumar, Potharaju. *Dev Dayal Gupta ke kavya mein bhakti avam darshan*. Hyderabad. Dr Ch Ramulu.

9. Priya, Ambika Kumari. *Shri Lal Shukla aur Narander Kohli ke upanyason mein samaj sameeksha : Vyangya ke sandarbh mein*. HP.

10. Rajput, Jileadar Singh C. *Rahi Masoom Raza : A study*. Gujarat. Dr Raghuvir Chaudhari, School of Languages, Gujarat University, Ahmedabad.

11. Sankhyadhar, Maheschandra. *Sathottari Hindi nukkar-natakon mein samkaleen Bhartiya rajnitik, arthik avam samajik paridrishtya*. Manipur. Dr Devraj, Department of Hindi, Manipur University, Imphal.

12. Shambhu Nath. *Mishrabandhu ke alochana-karm ka punramulyankan*. JNU. Prof Namwar Singh, Centre of Indian Languages, Jawaharlal Nehru University, New Delhi.

13. Tripathi, Shriram Jagdish. *Dhoomil aur parvati janvadi kavita*. Gujarat. Dr Raghuvir Chaudhari, School of Languages, Gujarat University, Ahmedabad.

14. Venkata Ramaiah, Batchu. *Tulasidas aur Ramadas ke kavyon mein bhakti tattva : Ek tulana*. Andhra.

15. Vithal, Narsingh Rao Bhalerao. *Nanded Zille ka bhasha sarvekshan*. Marathwada. Dr Rajmal Bora, Department of Hindi, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.

#### Marathi

1. Bapat, Vandana Shreeram. *Marathiteel prakasanacha vikas, prarambh te 1980*. Shivaji. Dr V N Kulkarni, 13, Sadguru Housing Society, Vishrambag, Sangli.

2. Bhadkamkar, Avinash Shripad. *Marathi katheteel balmanache chitran, 1885 te 1985*. Shivaji.

3. Gaikwad, Hemalata Ramchandra. *Adhunik Marathi grameen kavita : Ek abhyas*. Shivaji. Dr S R Chavan, Reader and Head, Department of Marathi, Kisan Veer Mahavidyalaya, Wai.

4. Gavas, Rajaram Ganpati. *Bhau Padhye yanchya kathatmak sahityacha abhyas*. Shivaji. Dr G M Power, 10A, Bhagwant Housing Society, Vijapur Road, Solapur.

5. Ghatgode, Anand Shankar. *Vinoba Bhawe yanchya lekhanacha vangmayeen abhyas*. Shivaji. Dr L R Nasirabadkar, Prof and Head, Department of Marathi, Shivaji University, Kolhapur.

6. Joshi, Geeta Narendra. *G V Vinda, Karandikar : Ek chikitsak abhyas*. Shivaji. Dr N J Phadkule Vivek, 10, Vidyanagar, North Sadarbazar, Solapur.

7. Mandape, Nilambari Ramesh. *Marathi pradeahik kadambriteel samajiktech chitran*. Shivaji. Dr G M Power,

Prof and Head, Department of Marathi, Shivaji University, Kolhapur.

#### Manipur

1. Chandrekala Devi, Chingangbam. *A comparative study of Imphal, Sekmai and Khurkhul dialects of Meiteirol*. Manipur. Dr P Madhubala Devi, Department of Linguistics, Manipur University, Imphal.

#### Arabic

1. Basheer Ahmed, A. *A contrastive study of syntax in Arabic and English*. CIEFL. Prof Moinuddin Azmi.

2. Syaidah Kamalunnisa Begum Nehri. *A critical study of prose and its development in Abbasid period*. Osmania. Dr Md Sultan Mohiuddin, Department of Arabic, Osmania University, Hyderabad.

#### Kannada

1. Nayak, Shanti Hammanna. *Gourish Kaykini : Baduku - barah*. Karnatak. Dr B V Shirur, Reader, Department of Kannada, Karnatak University, Dharwad.

#### Telugu

1. Lakshmi, G S. *Bhava-kavithayugamle geyakavyalu : Vakyaprayoga vaichitriparyayeelana*. Hyderabad. Dr P Ramanarasimham.

2. Parvatham, N. *Yakshaganamu-Bhagavatha kathalu*. Osmania. Dr K Venkat Reddy, Department of Telugu, Osmania University, Hyderabad.

3. Rajeswari, G. Sri Nori Narasimha Sastri garu navalalu : *Charitra ka vishtyamu*. Bangalore. Dr D Rajeswari, Head, Department of Telugu, Govt Arts College, Bangalore.

#### Geography

1. Chennais, Gopisetty Chinna. *Land use studies in Prakasam, District A P, India, using remote sensing techniques*. Osmania. Prof V Vidyanath, Department of Geography, Osmania University, Hyderabad.

2. Govindar, V. *Impact of conversion of natural forests to agriculture and plantation crops on local economy and environment, Kerala*. Bangalore. Dr M V Nadkarni, Prof, Department of Geography, University of Madras, Madras.

3. Kakati, Millie. *Greater Guwahati : A study on urban land use pattern*. Gauhati. Dr N N Bhattacharyya.

4. Kar, Manik. *Flood hazard in Nagaon and Marigaon*

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5. Pardeshi, Pratapsing Bapusing. The population geography of Solapur District. Shivaji. Dr M D Tawade, Member of MPSC, Reader (Retd), Department of Geography, Shivaji University, Kolhapur.

6. Sawant, Prakash Ramchandra. Ecological and socio-economic impact of Dhoni Dam on affected and benefited area of Wal Taluka. Shivaji. Dr P W Deshmukh, Prof and Head, Department of Geography, Shivaji University, Kolhapur.

#### History

1. Borkar, Sangita Manohar. Bhartiya swatantraya sangramateel Marathi vrittpatranche yogdan 1985-1920. Nagpur. Dr K A Shete, Department of History, Nagpur University, Nagpur.

2. Guha, Sujit Chandra. Silk industry of Malda and Murshidabad from 1660 to 1833 : A study of its production organisation, production relations, market and the effect of decline on the economy of the people. NBU.

3. Jha, Ashok Kumar. A historical study of the Matsya Purana. Manipur. Prof G P Singh, Department of History, Manipur University, Imphal.

4. Mehra, Pramod. A study of the records administration policy of the Government of India and the role of Indian Historical Records Commission, 1891-1950. Durgavati. Dr J P Mishra, Department of History, Rani Durgavati Vishwavidyalaya, Jabalpur.

5. Parekar, Nanda Dasherath. Evolution and growth of culture in Ancient Maharashtra. Shivaji. Dr B R Kamble, Prof, Department of History, Shivaji University, Kolhapur.

6. Potdar, Vithal Dhirendrarao. Public finance in early and mediaeval Deccan : A study of the system of economy from 6th to 18th century A D. Karnatak. Dr S L Shantakumari, Prof, Department of History and Epigraphy, Karnatak University, Dharwad.

7. Prasada Rao, T S V. Coromandel Commerce, c 1650-1750 A D : A socio-economic study. Nagarjuna.

8. Rekha. Militant nationalism in Panjab, 1905-1919. Kurukshetra.

9. Saxena, Madhu. Gandhi yugeen swadhinta andolan aur Hindi sahitya. Durgavati. Dr V B Dewalia, Department of Hindi, Rani Durgavati Vishwavidyalaya, Jabalpur and Dr D N Mishra, D N Jain College, Jabalpur.

10. Shrivastava, Mukul. San 1920 se 1942 tak Bhartiya Rashtriya Congress ke nitiyon ka adhyayan. Durgavati. Dr M D Mishra, 859, Gol Bazar, Jabalpur.

11. Shrivastava, Raj Narain. Maikal kahetra ke murtikala ka adhyayan, 600 lavl se 1200 lavl tak : Shahdol Jile ke vishesh sandarbh mein. Durgavati. Dr S K Sulleray, Department of Ancient Indian History Culture and Archaeology, Rani Durgavati Vishwavidyalaya, Jabalpur.

12. Sudhakar, P. Socio-economic conditions in Rayalaseema in the Vijayanagar period A D 1336-1565 A D. Krishnadevaraya. Dr Y Ramachandra Reddy, Department of History, Sri Krishnadevaraya University College, Anantapur.

## ANNAMALAI UNIVERSITY

### RAJAH MUTHIAH INSTITUTE OF HEALTH SCIENCES

### RAJAH MUTHIAH DENTAL COLLEGE

## ADMISSION TO M.D.S. COURSE FOR 1995-96

### NOTIFICATION

Applications are invited for admission to M.D.S. Course for the Academic Year 1995-96.

#### BRANCHES OFFERED

1. ORAL AND MAXILLOFACIAL SURGERY
2. PERIODONTIA
3. PEDODONTIA
4. ORTHODONTIA
5. PROSTHODONTICS

#### APPLICATION PROCEDURES :

Cost of Application Form with prospectus Rs 300/- (including Entrance Examination Fee).

The Application form along with prospectus can be had from The Registrar, Annamalai University, Annamalaiagar-608002 on payment of Rs. 300/- in person or by sending a Demand Draft obtained, on or after 19-05-95 drawn in favour of the "The Registrar, Annamalai University, Annamalaiagar" from Indian Bank or Bank of Madras Ltd., payable at Annamalaiagar (or) State Bank of India payable at Chidambaram, along with a self addressed stamped envelope of size 30 cm x 15 cm, stamps affixed to the value of Rs. 4/- with the name of the course for which the application is required should be superscribed boldly on the envelope. The name of the course should be clearly indicated in the requisition letter. The name and address of the candidate and course for which application is made should be clearly indicated on the back side of the Demand Draft.

**NO OTHER BANK DEMAND DRAFTS WILL BE ACCEPTED**

Details	Date
1. Issue of Application form with prospectus from the University	: 19-05-95
2. Last date for issue and receipt of filled-in application to the University	: 17-06-95

For more details refer respective prospectus.

The University will not be responsible for any postal delay.

No. K2/Advt. No. 3/95-Admn.

Annamalaiagar

06-05-95

Dr. PL. Sebarathnam  
REGISTRAR

# ANNAMALAI UNIVERSITY

## RAJAH MUTHIAH INSTITUTE OF HEALTH SCIENCES

### NOTIFICATION

## ADMISSION TO PROFESSIONAL COURSES (SELF FINANCING)

M.B.B.S./B.D.S./B.P.T./B.O.T./B.Sc (Nursing)/ M.Pharm/ B.Pharm & D.Pharm.

Applications are invited for admission to the following courses of study for the academic year 1995-96. The cost of application forms along with prospectus is noted against each course.

SL No.	Name of the Courses	
1.	M.B.B.S. (Bachelor of Medicine & Bachelor of Surgery)	Rs. 350/-
2.	B.D.S. (Bachelor of Dental Surgery)	Rs. 200/-
3.	B.P.T. (Bachelor of Physiotherapy)	Rs. 250/-
4.	B.O.T. (Bachelor of Occupational Therapy)	Rs. 250/-
5.	B.Sc. (Nursing)	Rs. 100/-

#### FACULTY OF ENGINEERING & TECHNOLOGY (INSTITUTE OF PHARMACEUTICAL TECHNOLOGY)

6.	M.Pharmacy (Industrial Pharmacy)	Rs. 150/-
7.	B. Pharmacy	Rs. 125/-
8.	D. Pharmacy	Rs. 75/-

#### ELIGIBILITY FOR ADMISSION TO M.B.B.S. AND B.D.S.

- (i) Any Candidate who is a citizen of India with the following Academic qualification can apply.
- (ii) A Pass in HSC Examination with Biology or Botany and Zoology, Physics and Chemistry or an equivalent examination.

#### REQUIRED MINIMUM MARKS :

Subject or group of Subjects	Community			
	OC	BC	MBC/DC	SC/ST
Biology (or) Botany & Zoology (Put together)	60%	60%	55%	40%
Physics	60%	60%	55%	40%
Chemistry	60%	60%	55%	40%
Aggregate Marks out of 200	140	130	120	80

#### ELIGIBILITY FOR ADMISSION TO B.P.T./B.O.T.

- (i) An Aggregate of 50% of marks in the Science subjects Biology or Botany and Zoology, Physics and Chemistry examination of HSC (or) any examination accepted by Annamalai University, as its equivalent.
- (ii) Candidates belonging to Scheduled Caste and Scheduled Tribe, an aggregate of 40% of marks in the Science Subjects Biology or Botany and Zoology, Physics and Chemistry examination of H.S.C.

#### ELIGIBILITY FOR ADMISSION TO B.Sc. (Nursing)

Unmarried Female candidates only are eligible to apply. Academic and Vocational Stream.

Subject/s	Community	Minimum Marks required
A. Biology (or) Botany and Zoology (put together)	OC/BC/ MBC/DC Candidates	50%
B. Physics	-do-	50%
C. Chemistry	-do-	50%
D. English	-do-	40%
Aggregate marks out of 300 (A+B+C)	-do-	165
For SC/ST—40% of Aggregate marks in the Science subjects.		

#### ELIGIBILITY FOR ADMISSION TO B.PHARM. COURSE

- (i) A pass in HSC Examination or an equivalent examination with Physics, Chemistry and Biology or Botany and Zoology or Mathematics.
- (ii) A pass in Diploma in Pharmacy Course as per new educational regulations of Pharmacy Council of India.
- (iii) A pass in B.Sc. degree in one attempt in Biology or Botany and Zoology, Physics, Chemistry and Mathematics subjects either at the Plus Two level or at the graduate level.

#### REQUIRED MINIMUM MARKS :

Subject or group of Subjects	Community			
	OC	BC	MBC/DC	SC/ST
Biology (or) Botany & Zoology (put together) (or) Mathematics Physics & Chemistry (put together)	55%	55%	50%	40%
Aggregate Marks out of 200	130	120	110	80

#### Maximum number of attempts for MBBS/BDS/BPT/BOT/B.Sc. (Nursing) and B.Pharmacy Courses

Community	Maximum No. of Attempts to pass	Maximum No. of Improvements	Maximum Total No. of appearances
1. Scheduled Caste/ Scheduled Tribe	Three	One	Four
2. For others	Two	One	Three

#### Age Limit for MBBS/BPT/BOT/B.Sc. (Nursing) B.Pharmacy & D.Pharmacy

The Candidates should have completed 17 years and should not have completed the age as indicated below as on 31st December, 1995

Community	Age
1. Scheduled Caste/Scheduled Tribe	: 24 years
2. For others	: 21 years

#### GENERAL INSTRUCTIONS

1. Candidates who have appeared for the Entrance Examination conducted by the Annamalai University for the above courses (Except M.Pharmacy & D.Pharmacy) are only eligible.
2. Candidates who have not appeared for entrance examination are advised not to apply for course application, for the courses mentioned in (1).
3. A separate interview for each course will be conducted only at Annamalai Nagar.

#### APPLICATION PROCEDURES :

The Application form along with prospectus can be had from The Registrar, Annamalai University, Annamalai Nagar-608002 on payment of amount noted against each course in person or by sending a Demand Draft obtained on or after 19-05-95 drawn in favour of the "The Registrar, Annamalai University, Annamalai Nagar" from Indian Bank or Bank of Madras Ltd., payable at Annamalai Nagar (or) State Bank of India payable at Chidambaram, along with a self addressed stamped envelope of size 30 cm x 15 cm. Stamps affixed to the value of Rs. 6/- with the name of the course for which the application is required should be superscribed boldly on the envelope. The name of the course should be clearly indicated in the requisition letter. The name and address of the candidate and course for which application is made should be clearly indicated on the back side of the Demand Draft.

#### NO OTHER BANK DEMAND DRAFTS WILL BE ACCEPTED

Sl. Course No.	Date of issue of application form with Prospectus	Last date for issue and receipt of completed application form
1. MBBS/BDS/BPT/BOT B.Sc. (Nursing)/B.Pharmacy	19-05-95	17-06-95
2. M. Pharmacy	19-05-95	17-06-95
3. D. Pharmacy	19-05-95	17-06-95

For more details refer respective prospectus.  
The University will not be responsible for any postal delay.

No. K2/Advt. No. 296 (Admn.)

Annamalai Nagar  
05-05-95

Dr. PL. Subarathnam  
REGISTRAR

# INDIAN COUNCIL OF AGRICULTURAL RESEARCH

## Jawaharlal Nehru Awards for Post Graduate Agricultural Research - 1995.

The Indian Council of Agricultural Research invites applications from post-graduate students who have obtained their Ph.D. degrees during the year 1994 in India in Agriculture or Allied Sciences for Jawaharlal Nehru Awards for Post-Graduate Agricultural Research-1995. There will be sixteen prizes of Rs. 10,000/- each for outstanding research work of the following nature:

- (i) which may have bearing on finding a solution to any important national problem in the field of agriculture/animal sciences, and/or
- (ii) which is likely to have impact on increasing the production or improving the quality of any important crop, human nutrition or animal productivity or increasing the technological efficiency of any process of economic importance connected with agriculture.

Candidates shall be required to submit the following documents along with application form through the head of the Institute from where the thesis has been obtained:

- (i) A copy of the Ph.D. degree certificate.
- (ii) A copy of the thesis submitted by them for the award of doctoral degree.
- (iii) A certificate from the guide of the candidate for Ph.D. degree stating the extent to which the work is the candidate's own contribution.
- (iv) Six copies of the synopsis indicating precisely and in concise terms of work done by the candidate.
- (v) Any reprint of papers published/presented based on the doctoral thesis.
- (vi) Six copies of the application form with complete address for correspondence with telegraphic address if possible.

Each candidate will be judged on the basis of the originality and the applied value of the investigations as revealed in the thesis submitted by him. In all matters relating to the award the decision of the Council shall be final and no correspondence on this account will be entertained. The candidates who obtained their Ph.D's in 1994 only need apply. The prescribed proforma for applying for this award may be obtained from the Council on or before July '30, 1995.

Applications, with complete documents as mentioned above, addressed to Dr. R.C. Maheshwari, Assistant Director-General (CSC), Indian Council of Agricultural Research, New Delhi-110001, should be sent so as to reach on or before August 30, 1995. The last date for candidates in the Andaman and Nicobar Islands, Lakshadweep, States/Union Territory in the North Eastern Region, Ladakh Division of J & K State and Sikkim is September 15, 1995. The award winning thesis will be retained by the Council for record. In case the application is not accompanied by a copy of thesis and the required number of copies of synopsis and the application form is liable to be rejected at the screening stage.



# COLLEGE OF APPLIED SCIENCES FOR WOMEN

(University of Delhi)

(Sponsored by Delhi Administration)

JHILMIL COLONY, VIVEK VIHAR, DELHI-110 095. PH. 2213024

## ADMISSION NOTICE

The College of Applied Sciences for Women, University of Delhi (Sponsored by Delhi Administration), invites applications for admission to the following three year (fulltime) degree courses of the University of Delhi for the academic session beginning in July, 1995.

1. Bachelor of Applied Science in Electronics - 20 seats
2. Bachelor of Applied Science in Instrumentation - 20 seats
3. Bachelor of Applied Science in Food Technology - 20 seats

The objective of these courses is to build a strong foundation of the students in basic sciences in the first year. Specialization starts in the Second Year in Food Technology/ Electronics/Instrumentation. The students will be given extensive training in computer programming. At the end of Second Year students in different courses will be given summer training in various firms and institutes. In the third year, they will carry out various projects so as to enable them to get suitable employment.

### ELIGIBILITY CONDITIONS :

(a) A candidate seeking admission to Bachelor of Applied Science must have attained 17 years of age on October 1st, 1995. However, condonation of short age upto one year can be granted by the Vice-Chancellor. (b) She must have passed the Senior Secondary Examination of the Central Board of Secondary Education or any other examination considered equivalent by the University of Delhi, with Science and with atleast 60% marks in three Science subjects (PCM-PCB) (5% concession of marks is allowed to the children/ widows of armed personnel killed/disabled in action during the hostilities, Scheduled Caste and Scheduled Tribe candidates). Selection will be made on the basis of merit cum interview.

### BULLETIN OF INFORMATION :

Admission form attached with prospectus can be obtained on all working days (Monday through Friday) between 10.00 A.M. and 1.00 P.M. from the College Office on payment of Rs. 20/- (non-refundable) at the counter or by post by sending crossed Bank Draft/I.P.O. in favour of the Principal, College of Applied Sciences for Women, Delhi. Separate form should be filled for each Course. Additional forms can be obtained for Rs. 2/- each. Candidates requesting forms by post must also send a self-addressed envelope (10" x 8") bearing stamps of Rs. 4/-. The last date for receipt of the application forms is **20th June 1995 by 1.00 P.M.**

No Hostel facilities are available.

**Dr. S. Lakshmi Devi**  
**PRINCIPAL**



# ANNAMALAI UNIVERSITY

## NOTIFICATION

### ADMISSION TO PROFESSIONAL COURSES

Applications are invited for admission to the following courses of study for the academic year 1995-96. The Cost of application forms along with prospectus is noted against each course.

Sl. No.	Name of the Course	
1	B.E./B.E. (Chem.) Degree - Regular BRANCHES OFFERED : 1 Civil 2 Civil & Structural 3 Mechanical 4 Mechanical & Production 5 Electrical & Electronics 6 Electronics & Instrumentation 7 Computer Science & Engineering 8 Chemical Engineering	Rs. 100/-
2	B.E./B.E. (Chemical) Degree - Part-Time 1 Civil & Structural 2 Mechanical & Production 3 Electrical & Electronics 4 Chemical Engineering	Rs. 100/-
3	M.E./M.E. (Chemical) Degree (Regular & Part-Time)	Rs. 100/-
4	M.C.A. (Master of Computer Applications)	Rs. 150/-
5	Post Graduate Diploma in Computer Science and Applications	Rs. 100/-
6	B.Sc. (Agriculture)/M.Sc. (Agriculture)	Rs. 100/-

#### 1. ELIGIBILITY FOR ADMISSION TO B.E./B.E. (CHEMICAL)

- A pass in HSC (Academic) with Mathematics, Physics and Chemistry OR
- A pass in HSC (Vocational Stream) with Mathematics/Physics and related vocational subjects. OR
- Diploma in any one of the courses viz., Civil, Mechanical, Electrical, Electronics, Chemical and Computer Science and Engineering OR
- Any other equivalent examination approved by the Annamalai University.

#### A. REQUIRED MINIMUM MARKS - ACADEMIC STREAM

Subject or group of Subjects	Community			
	OC	BC	MBC/DC	SC/ST
Mathematics	80%	80%	55%	40%
Physics & Chemistry (put together)	80%	80%	55%	40%
Aggregate Marks out of 200	140	130	120	80

#### B. REQUIRED MINIMUM MARKS - VOCATIONAL STREAM

Subject or group of Subjects	Community			
	OC	BC	MBC/DC	SC/ST
Mathematics/Physics	80%	80%	55%	40%
Vocational Subjects (including theory & practical put together)	80%	80%	55%	40%
Aggregate Marks out of 200	140	130	120	80

#### C. ELIGIBILITY FOR DIPLOMA HOLDERS:

A minimum average of 80% marks in each subject of the final two semesters (i.e. 5th & 6th) and an aggregate of marks 70% put together in the final two semesters.

#### 2. ELIGIBILITY FOR ADMISSION TO B.Sc. (Agriculture) Course

- A Pass in HSC (Academic) with Biology or Botany and Zoology, Physics and Chemistry. OR
- A pass in HSC (Vocational Stream) with Biology and related vocational subjects. OR
- Any other equivalent examination approved by the Annamalai University.

#### A. REQUIRED MINIMUM MARKS - ACADEMIC STREAM

Subject or group of Subjects	Community			
	OC	BC	MBC/DC	SC/ST
Biology (or) Botany & Zoology (put together)	80%	80%	55%	40%

Physics & Chemistry (put together)	80%	80%	55%	40%
Aggregate Marks out of 200	140	130	120	80

#### B. REQUIRED MINIMUM MARKS - VOCATIONAL STREAM

Subject or group of Subjects	Community			
	OC	BC	MBC/DC	SC/ST
Biology	80%	80%	55%	40%
Vocational Subjects (including Theory & Practical put together)	80%	80%	55%	40%
Aggregate Marks out of 200	140	130	120	80

#### Maximum number of attempts for B.E./B.E. (Chemical) and B.Sc. (Agriculture)

Community	Maximum No. of Attempts to pass	Maximum No. of Improvements	Maximum Total No. of appearances
1 Scheduled Caste/Scheduled Tribes	Three	One	Four
2 For others	Two	One	Three

#### Age Limit for B.E./B.E. (Chemical) & B.Sc. (Agriculture)

The Candidates should have completed 17 years and should not have completed the age as indicated below as on 1st July, 1995.

Community	Age
1 Scheduled Caste/Scheduled Tribes	24 years
2 For others	21 years

#### GENERAL INSTRUCTION

- Applicants belonging to Tamil Nadu only will be considered for admission.
- Candidates who have appeared for entrance examination conducted by the Annamalai University are only eligible for the B.E./B.E. (Chemical) and B.Sc. (Agriculture) Courses.
- Candidates who have not appeared for entrance examination are advised not to apply for course application for the courses mentioned in (2).
- Candidates working or residing within 50 km. radius in and around Annamalai Nagar are only eligible to apply for the B.E./B.E. (Chemical) and M.E. - Part-time courses.

#### APPLICATION PROCEDURES:

The Application form along with prospectus can be had from The Registrar, Annamalai University, Annamalai Nagar-608002 on payment of amount noted against each course in person or by sending a Demand Draft obtained on or after 19-05-95 drawn in favour of the "The Registrar, Annamalai University, Annamalai Nagar" from Indian Bank or Bank of Madras Ltd., payable at Annamalai Nagar (or) State Bank of India payable at Chelambaram, along with a self addressed stamped envelope of size 30 cm x 15 cm stamps affixed to the value of Rs. 5/- with the name of the course for which the application is required should be superscribed boldly on the envelope. The name of the course should be clearly indicated in the requestion letter. The name and address of the candidate and course for which application is made should be clearly indicated on the back side of the Demand Draft.

#### NO OTHER BANK DEMAND DRAFTS WILL BE ACCEPTED

Sl. Course No.	Date of issue of application form with Prospectus	Last date for issue and receipt of completed application form
1 B.E./B.E. (Chemical) - Regular	19-05-95	17-06-95
2 B.Sc. (Agriculture)	19-05-95	30-06-95
3 M.C.A. & P.G.D.C.A.	19-05-95	30-06-95
4 B.E./B.E. (Chemical) Part-time	19-05-95	09-06-95
5 M.E./M.E. (Chemical)		
Regular & Part-time	19-05-95	07-07-95
6 M.Sc. (Agriculture)	19-05-95	30-09-95

For more details refer respective prospectus.

The University will not be responsible for any postal delay.

No. K2/Advt. No. 1/95-Adm.

Annamalai Nagar

05-05-95

Dr. PL. Sabarathnam  
REGISTRAR

# INDIAN SCIENCE CONGRESS ASSOCIATION

## ANNOUNCEMENT FOR AWARDS : 1995-96

- (i) **Dr. B.C. Deb Memorial Award for Soil/Physical Chemistry**
- (ii) **Dr. B.C. Deb Memorial Award for Popularisation of Science**
- (iii) **Prof. R.C. Shah Memorial Lecture and**
- (iv) **Professor Umakant Sinha Memorial Award**

Nominations are invited from Members of ISCA Council and Heads of Universities/IITs, Research Institutes and Learned Societies for the above awards. Each award carries for Sl. No. (i) to (iii) a cash amount of Rs. 5,000/- and a plaque and for Sl. No. (iv) a cash amount of Rs. 4,000/- and a certificate. The last date for submitting nominations for all the awards is **July 31, 1995**. The details of the awards are as follows :

For (i) A candidate must be below 45 years on 31st December, 1994 and must have a Ph.D. degree in any branch of **Soil/Physical Chemistry**. He/She must have published outstanding research papers in any branch of Soil/ Physical Chemistry, either independently or as a research guide. The award will be made on the basis of work done in India during the last five years. The awardee will be required to deliver a lecture on the subject of his/her contributions during the Annual Session of the Indian Science Congress in the Section of Chemistry.

For (ii) A candidate must be below 45 years on 31st December, 1994 and must be an Indian national with a science/technology degree having sustained interest for **popularising science** as evidenced by publications. The awardee will be required to deliver a lecture on the topic of his/her contributions during the Annual Session of the Indian Science Congress in the Committee on Science and Society.

For (iii) A candidate must be below 45 years on 31st December, 1994 with a notable research contributions in the field of **organic, pharmaceutical and biological Chemistry** either independently or under his supervisor in India. The Lecturer will be selected on the basis of work done in India during the last five years. The Lecturer will be required to deliver a lecture on the subject of his/her contributions during the Annual Session of the Indian Science Congress in the Section of Chemistry.

For (iv) A candidate must be below 40 years on 31st December, 1994 and must have Ph.D. degree in any discipline of **Plant Sciences related to Biochemistry, Biophysics & Molecular Biology**. The award is to be given on original independent published work. The awardee will be required to deliver a lecture on the subject of his/her specialisation during the Annual Session of the Indian Science Congress in the Section of Biochemistry, Biophysics & Molecular Biology.

For prescribed proforma of nomination forms and necessary information, please write to the **General Secretary, Indian Science Congress Association, 14, Dr. Bireswari Guha Street, Calcutta-700017.**

# ANNAMALAI UNIVERSITY

## NOTIFICATION

Applications are invited for admission to the following (Regular) courses of study for the academic year 1995-96. The Cost of Application Forms along with prospectus is noted against each course.

Sl. No.	Course	
1.	<b>M.A. Degree :</b> <b>BRANCHES OFFERED :</b> Philosophy, Psychology, History, Political Science, Economics, English, Tamil, Sanskrit, Linguistics, Sociology, Population Studies, Applied Economics, Development Studies, Translation, Hindi Translation and Gandhian Studies.	Rs. 50/-
2.	<b>M.Sc. Degree :</b> <b>BRANCHES OFFERED :</b> Mathematics, Statistics, Physics, Chemistry, Bio-Chemistry, Botany, Zoology, Geology, Marine Biology and Oceanography and Coastal Aquaculture.	Rs. 50/-
3.	<b>M.Com Degree :</b>	Rs. 50/-
4.	<b>B.L.I.S. and M.L.I.S.</b>	Rs. 50/-
5.	<b>Post Graduate Diploma Courses :</b> <b>SUBJECT OFFERED :</b> Tourism, Archives Keeping, Econometrics, Gandhian Thought, Ramalinga Philosophy, Guidance and Counselling. Corporate Secretaryship, Applied Linguistics, Insurance, Public Administration, Banking Law and Practice, Population Education and Statistics.	Rs. 50/-
6.	<b>B.Ed., M.Ed., B.P.S.E. and M.P.E.S.</b>	Rs. 50/-
7.	<b>B.Music, Title of Isakkalaimani, Natyakalaimani, Isalcheivamani.</b>	Rs. 25/-
8.	<b>Evening Course in Music (Vocal)</b> (Part-time)	Rs. 20/-
9.	<b>Diploma Courses</b> (Part-time) <b>SUBJECTS OFFERED :</b> Tamil, Advanced Diploma for Proficiency in French, Linguistics, Languages (Tamil, Telugu, Kannada, Malayalam, Sanskrit, Hindi, Journalism and Folklore)	Rs. 20/-
10.	<b>Certificate Course :</b> (Part-time) <b>SUBJECTS OFFERED :</b> French, Journalism, Folklore, Reprography and Non-book materials, Languages (Tamil, Telugu, Kannada, Malayalam, Sanskrit, Hindi, English for Communication)	Rs. 20/-

### APPLICATION PROCEDURES

The Application form along with prospectus can be had from The Registrar, Annamalai University, Annamalai-nagar-608002 on payment of amount noted above in person or by sending a Demand Draft obtained on or after 19.05-95 drawn in favour of the "The Registrar, Annamalai University, Annamalai-nagar" from Indian Bank or Bank of Madura Ltd., payable at Annamalai-nagar (or) State Bank of India payable at Chidambaram, along with a self addressed stamped envelope of size 30 cm x 15 cm stamps affixed to the value of Rs. 4/- with the name of the course for which the application is required should be superscribed boldly on the envelope. The name of the course should be clearly indicated in the requisition letter. The name and address of the candidate and course for which application is made should be clearly indicated on the back side of the Demand Draft.

**NO OTHER BANK DEMAND DRAFTS WILL BE ACCEPTED**

Details	Date
1. Issue of Application form with prospectus from the University	19-05-95
2. Last date for issue and receipt of filled in application to the University	30-06-95

For more details refer respective prospectus

The University will not be responsible for any postal delay.

No. K2/Adv. No.5/95-Admn

Annamalai-nagar  
05-05-95

Dr. PL. Sabarathnam  
REGISTRAR

# CLASSIFIED ADVERTISEMENTS

## BANASTHALI VIDYAPITH (Deemed to be University)

Applications are invited for the following posts:

**Reader :** Drawing & Painting 1, Kathak Dance 1, Child Development 1, Foods & Nutrition 1, Clothing & Textile 1, **Qualifications :** Good academic record with atleast 55% marks or an equivalent grade at the Master's degree level. Eight years experience of teaching and/or research including upto 3 years for research degree & scholarship as evidenced by quality of publication, contribution to educational innovation, design of new courses & curricula.

**Lecturers:** Economics 1, History 1 (Temp.) Sociology 1 (Temp.) English 1 (Temp.) Sanskrit 1 (Temp.), Vedic Studies 1, Computer Science 2, Physics 1, Bio-science 1, Mathematics 1, Child Development 2 (1 Temp.) Foods and Nutrition 4 (1 Temp.), Clothing and Textile 3 (1 Temp.), Education 2, Physical Education 1. **Assistant Lecturer Kathak Dance 2, Technical Assistant Computer Science 1:** Qualifications as recommended by UGC except as given below. In case a suitable candidate who has cleared the eligibility Test for Lecturership conducted by the UGC/CSIR is not available, a candidate without this qualification may be appointed on the condition that confirmation will depend on clearance of such a test within the period of probation. The Selection Committee in its discretion may recommend a panel of names from which appointments may be made in a vacancy occurring within six months.

**Pay scale : Reader :**

3700-125-4950-150-5700

**Lecturer:**

2200-75-2800-100-4000

**Assistant Lecturer :**

2000-60-2300-3200

**Technical assistant :**

1640-60-2600-75-2900

Dearness Allowance, Contributory Provident Fund, Gratuity, Insurance and Family Pension benefits as per Vidyapith rules.

**Additional Qualifications and/or specialisation :**

1. **Lecturer Vedic studies :** Vyakarna-charya or M.A. with Vyakarna Group/Suklayajurvedacharya. Areas to be taught are certificate Diploma courses in Sanskrit/Vedic Studies & Shastri Degree courses. **Desirable :** Ph.D. or equivalent degree.

2. **Lecturer Computer Science :** I MCA/MSc. Computer Science/B.E. Computer Science/M.Tech. Computer Science after M.Sc. Physics/Mathematics.

3. **Lecturer Physics :** M.Sc. Physics with Electronics.

4. **Lecturer Bio-Sciences :** M.Sc. Bio-Sciences/Bio-technology. **Specialization :** Molecular Biology/Molecular Genetics/Microbiology/Microbial Bio-technology/Bio-chemistry.

5. **Lecturer Education :** At least II B.Ed. & M.Ed. with at least 55% marks. II M.A. History/English. **Desirable Specialisation :** Teacher Education/Philosophy of Education.

6. **Assistant Lecturer Kathak Dance :** II Graduate with Visharad in Dance or equivalent recognised degree in Dance or Training under a renowned Guru. **Desirable :** Post graduate qualification and experience.

7. **Technical Assistant Computer Science :** II MCA or B.Sc. with Computer Science or B.Sc. degree followed by a Diploma in Computer Application or Science awarded by a University.

(1) Workers must become habitua wearer of khadi on appointment.

(2) Higher start may be considered in exceptional cases.

(3) Reservation for SC/ST as per rules on the availability of suitable candidates.

(4) Vidyapith reserves the right to reduce or increase the number of vacancies or not to fill up any post/s advertised.

(5) Vidyapith will contribute travel assistance of one way Second class fare by shortest route for appearing at interview.

(6) Other things being same Women preferred.

**Note :** Candidates who have already applied for the post of Lecturer in Sanskrit, Computer Science and Foods and Nutrition in response to advertisement No. 13/94 need not apply again but should indicate continued interest.

**Last date of submission of application : 4 weeks from the date of advertisement.**

Application forms can be obtained by sending self-addressed envelope (16x23 cm.) with postal order of Rs. 10/- (Rs 3/- for SC/ST candidate) and Rs. 15/- if required by registered post to the Secretary, Banasthali Vidyapith, P.O. Banasthali Vidyapith (Rajasthan) 304022. No. 3/95.

**Sanjivani Education Society's  
COLLEGE OF ENGINEERING,  
KOPARGAON  
DIST - AHMEDNAGAR, PIN - 423 603**

**Gram : ENGICOL SHINGNAPUR  
LD. No. PU/AN/Engg. 026/(1983)  
Phone : (02423) - 22862/23362**

**WANTED**

Applications from suitable candi-



dates are invited on plain paper giving full Bio-data, stating Educational Qualifications, Experience along with copies of Certificates & Testimonials for the post of :

**Principal - For College of Engineering**

**Qualifications & Experience :** first Class Master's Degree in Engineering/Technology and Ph.D. in the relevant subject. Experience at least 10 years in teaching as Professor/as per University/AICTE norms.

**Salary :** As per AICTE/Pune University Pay Rules as per Govt. of Maharashtra.

Applications should reach the office of the College of Engineering, Kopargaon - 423 603 District Ahmednagar (M.S.) within 15 days from the date of publication of this advertisement.

**SECRETARY** **CHAIRMAN**  
SANJIVNI BDU SOCBY BDU COMMITTEE  
KOPARGAON SES, KOPARGAON

**CHAIRMAN**  
SANJIVANI BDU SOCEY  
KOPARGAON

**MAR ATHANASIOUS COLLEGE  
ASSOCIATION  
KOTHAMANGALAM  
KERALA STATE**

**WANTED**

**Lecturer in English :** 2 (Permanent post 1 & Anticipated post 1) Open Merit.

**Lecturer in Economics :** 1 (Leave Vacancy) Open Merit.

**Lecturer in Chemistry :** 1 (Anticipated Leave Vacancy) Open Merit.

**Lecturer in Zoology :** 1 (Anticipated Leave Vacancy) Open Merit.

**Librarian (UGC Scheme) :** 1 (Permanent) Open Merit.

The vacancies are subject to the sanction of posts by the Mahatma Gandhi University, Kottayam and review under the UGC Scheme.

**Age and Qualification :** As prescribed by the UGC/ Mahatma Gandhi University/Government of Kerala.

Candidates for Lecturership in Economics who had responded to an earlier notification dated 13.6.1994 need not apply again.

Apply to the Secretary within one month from the date of publication of this notification.

Application form and other details can be had from the Secretary, Mar Athanasius College Association, Kothamangalam on payment of Rs. 100/- in person or Rs. 110/- by DD payable at Kothamangalam Branch of any scheduled bank.

15.5.1995

**SECRETARY**

**REGIONAL ENGINEERING  
COLLEGE  
ROURKELA - 8**

**Advertisement No. 2/95**

**Dated : 19.5.1995**

Applications are invited in prescribed form, in duplicate for the following posts : **Professor :** (Computer Science, Engineering & Applications), Scale : Rs. 4500-150-5700-200-7300/-; **Lecturers :** (a) Mechanical Engineering (SC/ST); (b) Computer Science, Engineering & Applications (SC/ST); Scale : Rs. 2200-75-2800-100-4000/-, AICTE norms of qualification and experience as of University level Postgraduate Engineering College standard are adopted. **Deputy Registrar :** Scale : Rs. 700-40-900-EB-40-1100-50-1300/- (Un-revised). **Qualification & Experience :** A Bachelor Degree in Arts/Science/Commerce/Law. At least 15 years experience in a responsible administrative post in Government Departments, University or an Academic Institution out of which at least 5 years should be in an Academic Engineering Institution not below the rank of an Assistant Registrar. **Desirable :** Good knowledge in Academic and Examination affairs in an Engineering College. Those who have earlier applied in

response to our advertisement No. 13(Int)/94, dated 2.9.94 need not apply again but may submit additional data about themselves.

Candidates abroad may apply on plain paper giving full bio-data and fees. Authorities reserve the right to shortlist the candidates to be called for interview. The posts carry dearness allowances and other benefits as per State Government norms as approved by the authority. Total monthly emoluments at the starting point at present are : Professor - Rs. 8490/-; Lecturer - Rs. 4,708/- and Deputy Registrar : Rs. 4500/- (approximately).

Further details regarding qualification, experience, specialisation, other benefits etc. prescribed for the posts and prescribed application forms will be available from the undersigned on payment of Rs. 100/- (Rs. 25/- in case of SC/ST candidates) in shape of crossed Bank Draft in favour of Principal, Regional Engineering College, Rourkela payable at State Bank of India, REC Campus Branch, Rourkela-8 enclosing a self addressed envelope (size : 25 cm x 10 cm) with postage of Rs. 2/-. The last date of receipt of completed applications is June 19, 1995.

**REGISTRAR**

**It pays to**

**Advertise**

**in**

**University News**

# TRIPURA UNIVERSITY AGARTALA : TRIPURA

Advertisement No. 1/Estt/TU/95

Applications are invited in the prescribed form for the following posts :

SL. No.	Name of post	No. of post.	Scale of pay
1.	Registrar	1	Rs. 4500-150-5700-200-7300/-
2.	Controller of Examinations	1	Rs. 4500-150-5700-200-7300/-
3.	Secretary, FCPGC	1	Rs. 3700-125-4950-150-5700/-

## Qualification & age for SL. No. 1 & 2.

- (i) A postgraduate degree with at least 55% marks or its equivalent grade.
- (ii) At least 15 years of experience as Lecturer/Reader of which 8 years should be in Reader's grade with experience in Educational administration, or comparable experience in research establishments and other institutions of higher education or 15 years of administrative experience of which 8 years as Deputy Registrar or an equivalent post.
- (iii) Maximum age limit for the posts is 55 years as on 1st April 1995.

## Qualification & age for SL. No. 3.

- (i) A postgraduate degree with at least 55% marks or its equivalent grade.
- (ii) 8 years experience as a Lecturer in a college or a University with experience in educational administration or comparable experience in research establishments and other institutions of Higher Education OR 8 years administrative experience as Assistant Registrar or in a post carrying a scale of pay of Rs. 2200-4000/-
- (iii) Maximum age limit for the post is 55 years as on 1.4.95.

Prescribed application forms can be had either by post or by hand accompanied by an L.P.O. of Rs. 10/- (Rs. 2.50 for SC/ST) in the name of Tripura University, Agartala, along with a self-addressed envelope (27 x 12 cm) duly stamped (Rs. 3/- for ordinary or Rs. 10/- by Registered post) from the Assistant Registrar, Tripura University, Agartala - 799 004.

Duly completed application form must be accompanied by an L.P.O. of Rs. 25/- (Rs. 10/- for SC/ST) in the name of Tripura University, Agartala, so as to reach him on or before 30th June 1995.

The candidates called for interview will appear at their own cost. The university reserves the right to negotiate with suitable persons who may not have applied formally.

Those who applied for the post of Secretary, FCPGS in response to our earlier advertisement No. 2/Estt/TU/94 dated 16.3.94 need not apply afresh.

Dated, Agartala  
the 10 May 1995      Assistant Registrar

## SHIVAJI UNIVERSITY KOLHAPUR

### ADVERTISEMENT

Applications are invited for the post of Junior Research Fellow under the University Grants Commission funded project entitled 'Development and study of guided wave passive optical devices using specific refractive index layers deposited by various techniques'. The duration of the project is for three years. The candidate should have minimum 11nd

class in M.Sc. Physics/Electronics with NET/GATE qualified. Knowledge of Vacuum Physics/Thin Films is desirable.

In case NET/GATE qualified candidates are not available for the post of JRF, a candidate with minimum 55% marks in M.Sc. Physics/Electronics will be appointed as a Project Fellow. The salary for the JRF/P.F. are as per UGC rules.

Interested candidates should send their application on plain paper stating particulars regarding Qualification, Experience etc. to Dr. R.K. Puri, Principal Investigator, Department of USIC, Shivaji University, Kolhapur - 416 004 (M.S.) within fifteen days from the date of this advertisement.

Kolhapur

Date : 23/05/1995

Dr. B.P. Sabale

REGISTRAR

## DECCAN EDUCATION SOCIETY

PUNE - 411 004 (Maharashtra)

### WANTED

Applications in the prescribed form are invited for the post of PRINCIPAL in Deccan Education Society's Brihan Maharashtra College of Commerce, Pune-411 004. The post is for the open category candidates.

Educational Qualifications, Pay scales and the Service Conditions will be as per the rules laid down by the University of Poona.

Minimum teaching experience of 10 years at UG/PG level, as an approved teacher, is essential.

The services are transferable to any College of the Deccan Education Society affiliated to any University.

Applications in the prescribed forms,

duly filled in, should reach the Society's Office within 15 days from the date of publication of this advertisement.

For the form of application, apply by sending a self-addressed envelope (25 cm x 10 cm) and a crossed postal order of Rs. 20/- drawn in favour of The Secretary, Deccan Education Society, Pune-4. The forms are also available in the office of the Deccan Education Society during 12 noon to 4 p.m. on any working day on payment of Rs. 20/- only in cash.

**DR. S.R. KULKARNI**  
SECRETARY, DECCAN EDUCATION  
SOCIETY

Address for Correspondence  
The Secretary, Deccan Education  
Society,  
Fergusson College Campus, PUNE-4  
(Maharashtra State)

**MARIAN COLLEGE**  
KUTTIKANAM, PEERMADE  
(Aided College affiliated to M.G.  
University)

Applications for appointment to the following posts are invited from qualified persons so as to reach the undersigned within one month of publication of this advertisement. Application forms are available from the college office at Kuttikkanam in person on payment of Rs. 75/- or by post by sending Rs. 85/-. Age and qualifications as prescribed by Government. Applicants for the post of Last Grade Servants must be able to read and write any one language such as Malayalam or Tamil.

1. Junior Superintendent	—	1
2. Head Accountant	—	1
3. Librarian Gr. IV	—	1
4. Clerks (General section)	—	3
5. Assistant Accountant	—	1
6. Typist	—	1
7. Store Keepers	—	2
8. Library Attender	—	1
9. Last Grade Servants	—	5

Kuttikkanam  
8-5-1995

**MANAGER**

Devi Shreevani Education Society's  
**MAHADEVRAO SALGAOCAR**  
**COLLEGE OF LAW**  
MIRAMAR, P.O. CARANZALEM GOA  
(Affiliated to Goa University)

Applications are invited for the following posts:

(1) One Full-time Lecturer in Law  
Pay Scale - Rs. 2200-75-2800-EB-100-4000

(2) One Part-time Lecturer in Law  
Pay Scale - Rs. 1100-37.50-1400-50-2000

Qualifications : Good Academic Record with at least 55% marks or an equivalent grade at Master's Degree in Law.

Candidates besides fulfilling the above qualifications should have cleared the eligibility test for Lecturers. A full-time Lecturer is not permitted to practise Law.

In addition to pay, allowances will be paid according to the rules of Goa University and Goa Government.

Applications with full bio-data accompanied by copies of certificates and statement of marks from SSC examination onwards must reach the Principal within 15 days from the date of publication of this advertisement. Candidates who are already employed shall send their applications through proper channel.

**PRINCIPAL**



**SANJAY GANDHI POST GRADUATE  
INSTITUTE OF MEDICAL SCIENCES**

Raebareilly Road, Lucknow - 226 014

Phone No. 51200, 54804, 50700 Fax No. 501 500 051275

#### REQUIRES

Persons looking for challenging opportunity of being a part of super speciality apex tertiary health care organisation

#### I - MEDICAL SUPERINTENDENT

Pay-Scale: Rs. 5100-6150/- (may be revised to the pay scale of Rs. 5900-7300/-)

Age: Maximum age 50 years (may be relaxed for candidates with proven competence)

Qualification & Experience: A Medical qualification included in part I, II & III of IIIrd schedule of the Indian Medical Council Act of 1959 with a post-graduate degree in Hospital Administration or M.D./M.S. in a clinical subject with experience of having worked for more than 14 years in related speciality at a large teaching institution/reputed Private organisation. Candidates with experience of hospital administration will be given preference

#### II - CHIEF ENGINEER

(On attractive contractual terms & conditions)

Age: Maximum age 50 years (may be relaxed for candidates with proven competence)

Qualification & Experience: Graduate in Engineering (Civil/Mechanical/Electronics/Electrical/Bio-Medical/Marine Engg.) with minimum 15 years working experience in Govt. or reputed private organization, out of which at least 05 years experience should be in the capacity of Head of the Department.

Preference will be given to those possessing experience of having worked in large reputed hospitals

#### III - JOINT DIRECTOR (MATERIAL MANAGEMENT)

Pay-Scale: Rs. 4100-5300/- (Subject to approval of the State Govt.)

Age: Not exceeding 50 years

Qualification & Experience : (1a) MBA from a reputed Institute with Specialisation in Material Management or (1b) Graduation with First Class or High Second Class with P.G. Diploma in Material Management from a reputed Institute. Experience of 7 years for (a) and 10 years for (b) in Government Department/Public Sector/Large Private Undertaking. Preference will be given to those with experience in hospital procurement/imports.

Apply with detailed resume alongwith self attested certificates and testimonials to the Director, SGPGI, Raebareilly Road, Lucknow-226 014 (U.P.) alongwith bank draft of Rs. 100/- (Rupees hundred only) in favour of the Director, SGPGI. Last date for receiving application is July 15th, 1995. Appointment on deputation may be considered

Adv. No. 14/95-96

**DIRECTOR**

**TILAK MAHARASHTRA VIDYAPEETH**

(Deemed University)

Vidyapeeth Bhavan, Gultekadi,

Pune 411 037

Applications are invited in the prescribed form for the following posts, so as to reach the undersigned on or before 23rd June 1995.

Sr. No.	Name of Post	No. of Posts	Reservation			
			SC	ST	DTNT	Open
1.	Reader in Sociology	1	-	-	-	1
2.	Lecturer in Economics	1	1	-	-	-
3.	Lecturer in Political Science	1	1	-	-	-

1. Qualifications and pay-scales for the above posts are as per the norms laid down by the UGC, the details of which are available in accompaniment.
2. Candidate belonging to open category, fulfilling conditions of qualifications, experience etc. may send application for reserved posts. Such applicant may be considered, if the suitable reserved category candidate does not become available.

In case the candidates from S.C. category are not available the post will be filled in from any other categories strictly on temporary basis for one academic year i.e. 1995-96.

3. Application forms with accompaniment available in Vidyapeeth for Rs. 10/- or by post on payment of Rs. 20/- by D.D./I.P.O. to the Registrar, Tilak Maharashtra Vidyapeeth, Gultekadi, Pune 411 037.

Advt. No. 2/95-96

Date : 19-5-1995

V.S. Pol

REGISTRAR

**PONDICHERRY UNIVERSITY**

R. VENKATARAMAN NAGAR, KALAPET

PONDICHERRY 605 014

Invites Applications for the following :

S.No.	School/Centre/Department	Reader	Lecturer
1.	TAMIL	1	...
2.	COMPUTER SCIENCE	...	2 (One post each reserved for OBC & SC)
3.	BIO-TECHNOLOGY	1	...
4.	MANAGEMENT	1	1
5.	MATHEMATICS	...	1 (Reserved for OBC)
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NOTE : 1. In case sufficient ST candidates are not available for the posts reserved for ST, the SC candidates may be considered.

2. For S.No. 8, candidates belonging to Commerce discipline alone need apply.

3. For S.No. 2, candidates who have applied against our notification dated 10.12.1994, need not apply again.

POST	SCALE OF PAY	MAXIMUM AGE
READER	Rs. 3700-125-4950-150-5700	45 (Relaxable by 5 years
LECTURER	Rs. 2200-75-2800-100-4000	40 in the case of SC/ST candidates)

Prescribed application forms and particulars of qualification, areas of specialization, experience, etc., can be had by sending a requisition and a self-addressed envelope (27 x 12 cm) duly stamped (Rs. 3/-) to the Registrar, Pondicherry University, Kalapet, Pondicherry 605 014, accompanied by a crossed Demand Draft for Rs. 100/- (Rs. one hundred only) towards application and Registration fee, drawn in favour of the Finance Officer, Pondicherry University payable at Pondicherry. The SC/ST and the visually handicapped candidates alone are exempted from payment of application fee on production of relevant certificate.

The last date for the receipt of filled-in applications is 30-06-1995.

Pondicherry

15.5.1995

Dr. S.G. Bhat

REGISTRAR

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Applications in the prescribed form obtainable from the University Office are invited for the following posts so as to reach the undersigned on or before 30-6-1995 :

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REGISTRAR

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Advt. No. : 35  
Date : 26/5/1995

Subhaschandra Bhosale  
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D.C. Bhattacharyya  
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8. M.Sc. in Computer Science

Eligibility : B.Sc. with Maths./Statistics/Computer Science.

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Eligibility : 10+2

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#### Criteria for Admission :

1. Minimum qualifying marks :

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Courses	Date	Time
1-7 and 10-15	23/7/95	8:00 am
8	To be announced later	

Note : Admission to course 9 will be done on merit basis.

3. Applicants appearing in qualifying examination are eligible to apply.

#### How to Apply :

1. The information bulletin and the application form can be obtained from Prof. Y.M. Gupta, School of Studies in Physics, Admission Cell (Professional Courses), Jiwaji University, Gwalior.

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3. For each course a separate application form has to be submitted.

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Eligible candidates are required to appear in an Entrance Test to be held from 2.30 p.m. to 4.30 p.m. on Sunday, the 13th August, 1995 and have to qualify in the Entrance Test. Candidate's age should be 25 years as on 1st Jan., 1996.

The results of the Entrance Test would be available sometime in the second week of September, 1995 at the respective Regional Centres.

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Candidates who do not wish to pursue the MBA programme may avail the option of earning any one of the Specialisation Post Graduate Diplomas viz PGDHRM, PGDFM, PGDOM and PGDMM by taking direct admission. These candidates are not entitled to enter the MBA stream unless they qualify in the Entrance Test later. In such a case, these candidates need not repeat the courses which they have already completed in their Specialisation P.G. Diploma (Direct Entry) programme.

### Eligibility :

Bachelor's Degree with 3 years of supervisory/Managerial/professional experience as on 3.6.1995 or Professional Degree in Engineering/Technology/Medicine/Architecture/Law or Professional Qualifications in Accountancy/Cost and Works Accountancy/Company Secretaryship etc. or

A Master's Degree in any subject.

The University may consider other equivalent Degrees/qualifications in addition to the above, if required.

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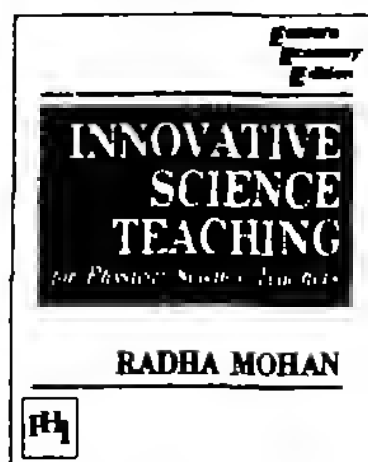
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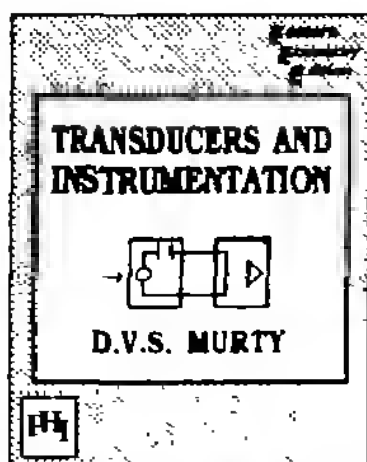


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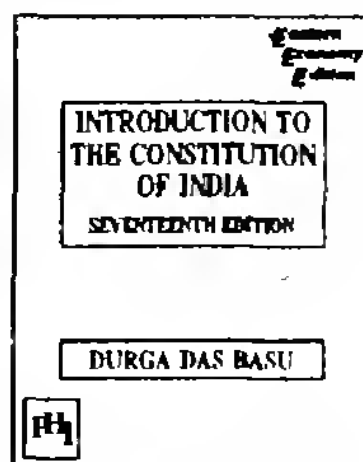


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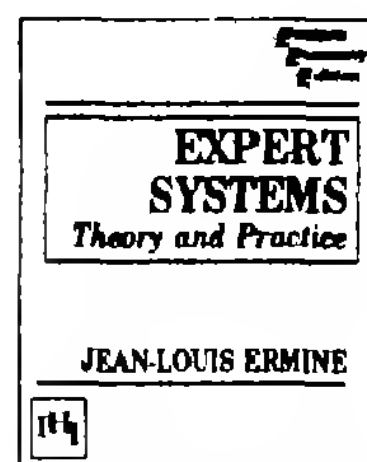


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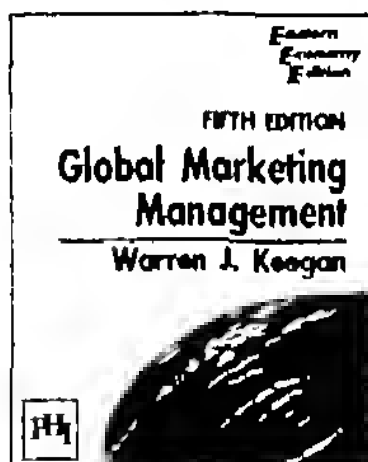


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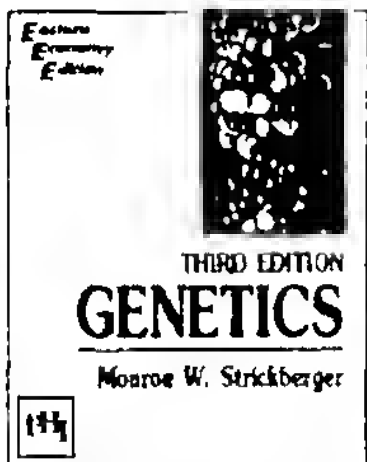


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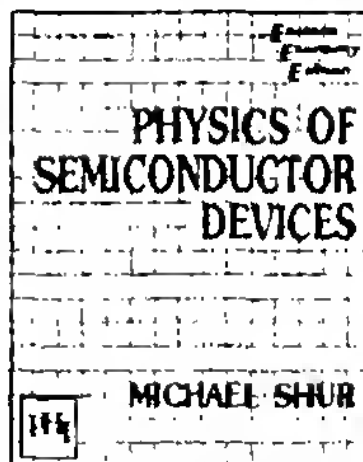
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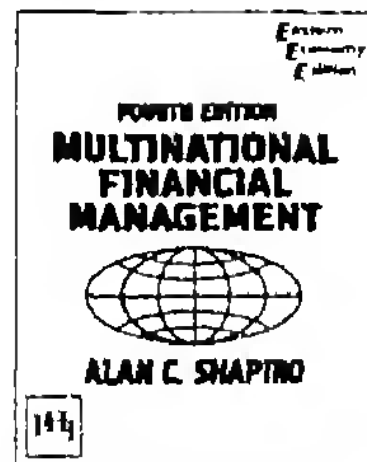


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Editor :  
SUTINDER SINGH

# Philosophy of Modern Science

K. Gopalan\*

Science is a way of thinking, observing and experimenting, and technology is its offspring. During the past half a century, there have been spectacular advances in science, which in a broad sense also includes technology. The world of today is largely the product of developments that have taken place in the field of science. Never before has any human generation faced such profound changes taking place with such rapidity. It has been rightly said that so rapid is the progress of science that a graduate in science is almost obsolescent on the day of his graduation, a research paper is almost out-of-date on the day of its publication, and an expensive research equipment is out of fashion by the time it is procured. Many scientific discoveries and their applications are today part of our daily life. Many of the advances in science have tremendous sociological and human implications. To understand these implications of science is an exercise in philosophy and ethics.

Under the impact of modern science, the very conception of the task of philosophy is undergoing a radical reorientation. It appears that the imagination of the scientists in recent times has far outrun that of the philosophers. In the forefront of current philosophy of science are studies in the logic and methodology of scientific theories as well as the inter-relation of the sciences. There is a fair measure of agreement today on how to conceive of philosophy of science as contrasted with the history or the psychology of science. The analyses pursued by philosophers of science pertain to the context of justification. On many signal occasions, great scientists have been their own philosophers in that they have produced new theories or methods aided by incisive critical scrutinies of the total relevant conceptual frame.

In view of the ever more rapid and extensive application of science to human affairs, it is imperative to keep scrutinising from a moral point of view its effects on our civilisation. The controversial issues such as family planning, eugenics, euthanasia and biological engineering should be discussed with an open and critical mind as well as with a firm commitment to the value and dignity of each individual human being. We do have the powers of rational deliberation, of freely choosing among alternative avenues of action, and, philosophically and scientifically speaking, we should follow the path of a genuinely scientific humanism. This will be the right philosophy of our age of science.

Science is truly the great adventure of the twentieth century—the culmination of man's long struggle to free himself from want and to ennoble himself with the inspiring knowledge of the grandeur of the universe. Science has unravelled the sub-atomic structure; it has ventured on to exploring outer space. But behind the scientific discoveries and technological inventions linger some unsuspected and unforeseen dangers. These discoveries and innovations have brought about several economic

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and sociological dislocations, the political effects of which are even more complex and diverse. Science has made it possible for the technologically advanced nations to achieve military power, economic strength and a superior status. This has led to the domination of affluent countries over the under-developed countries.

The problems of hunger and poverty, of arms-race and ethnic strife continue to plague the world. The nuclear threat remains. The environmental crises threaten the earth with complete annihilation of all forms of life. These problems present themselves to all human beings, wherever they may have been born and whatever their race or national origin.

## Two Cultures

It is unfortunate that in many countries including India there is a great divide between the humanities and the sciences — between the arts and the sciences, the so-called 'two cultures'. This polarised view of humanities and sciences, which is almost wholly a result of our polarised system of education, does not seem to be in order. In olden times, there was no division or distinction between humanities and sciences. Even at the beginning of the nineteenth century, all learning was called philosophy. And a man was called a philosopher even if he studied what we should now call mathematics or science. It is time that we go back to that situation. Integration of science and humanities — science and culture, science and spirituality — seems to be the only means of solving the numerous problems threatening mankind today.

Although in the popular view, science refers to the knowledge of the outer world and spirituality to the knowledge of man's spirit or inner self, knowledge is one and indivisible. Science in Latin means 'knowledge'. Science has to be understood in its original meaning of 'knowledge', and, as such, it must include knowledge of both the outer nature and man's own inner nature. This is the only antidote to the maladies afflicting mankind today.

Fortunately, researches by modern scientists have made all science undergo change and become more and more contiguous to philosophy. The British physicist, Sir James Jeans, has said that philosophy has become less concerned with ourselves and more concerned with the universe outside ourselves. Alfred North Whitehead, who was Emeritus Profes-

sor of Philosophy at Harvard University, deplored the separation of science from the affirmations of our aesthetic and ethical experience. Bertrand Russell said "Man has no chance of survival if knowledge remains knowledge, but if he could transform knowledge into wisdom, he will not only survive, he will be able to ascend to greater and greater heights of achievements". We must switch more and more of our scientific efforts from the exploration of outer space to the realm of our own minds and the psycho-metabolic processes at work in it.

The practical value of science has been astonishingly great, beyond all expectations. A selfless unflattering devotion to truth and the use of knowledge for man's upliftment are the ideals of a scientist. Scientific and moral truths are not contradictory. They are complementary. To disregard the complementarity of scientific and ethical truths — of matter and mind, of body and soul — can lead only to de-personalisation and de-humanisation of life. The highest type of scientific activity is not possible without a supreme faith in science and in man.

Even after all the marvellous scientific discoveries and inventions, the scientist still treats nature as profoundly mysterious. If science is to progress further, it has to choose for investigation also the field of the mystery of man which is as important as the mystery of the external universe. This is a vast field of study — the field of man's self-awareness, the field of his consciousness, his ego, his being the subject and not the object. The whole of modern scientific thought is in the throes of a silent spiritual revolution with the emergence, on the horizon of scientific thought, of the challenge of mind and consciousness, and the consequent need to develop, what Sir James Jeans terms 'a new background of science'.

To deal with the problems of his inner discord, modern man has to turn for help to religion — to the science of the spiritual nature of man. This finds clearest expression in the testament of the great astrophysicist R.A. Millikan at the conclusion of his autobiography: "It seems to me that the two great Pillars upon which all human well-being and human progress rest are, first, the spirit of religion (or spirituality), and second, the spirit of science — or knowledge. Neither can attain its largest effectiveness without support from the other". Sir Richard Gregory touched the heart of the matter when he observed: "Science is not merely a storehouse of facts to be used

for material purposes, but is one of the great adventures to be ranked with arts and religion as the guide and expression of man's fearless quest for truth".

It is good for us in India today to know that our ancient insights into the spiritual oneness of the whole universe received re-authentication from one of our own modern scientists, Sir Jagadish Chandra Bose. He did it through the rigorous methods of modern scientific investigation and discovery, and he was also fully conscious of this close kinship between ancient insights and modern scientific discoveries. His findings received world-wide acceptance and recognition. Significantly, this was precisely what Swami Vivekananda also had showed : that spirituality, as developed in India centuries ago in her Vedanta, and modern science, are close to each other in spirit and temper and objectives. In this context, it is important to point out that India has had a long and distinguished tradition in science. Scientific thought and innovative ideas have been the very basis of Indian civilisation, which is well over 4000 years old. Science was part and parcel of Indian way of life

### Cosmic Unity

It is now abundantly clear that man has no future without science. But, science is amoral. It has no value judgement. It is neutral. It needs to be guided. And this guidance can come only from spirituality or religion. The two streams of scientific materialism and scientific spirituality seem to come together to foster a cosmic unity and universal consciousness, never seen before. The combination today of the two complementary disciplines of physical science and the science of spirituality will produce integrated human beings, and thus help to evolve a complete human civilisation, for which the world is ripe -- and waiting.

People all over the world should be enabled to participate in the march of science, which as Jawaharlal Nehru has said, is mankind's greatest enterprise today. Science and technology should be put to use to mitigate man's misery, to reduce drudgery of work, to provide gainful employment, to improve the quality of life, and to mobilise and optimise the use of natural and human resources all over the world. Many of these efforts demand international collaboration. It is gratifying to note that almost all national governments encourage and support international scientific organisations such as UNESCO,

FAO and WHO, which have been designed and established to facilitate cooperation on an international basis. Science does offer to us ample opportunities for the maintenance of peace through the development of better understanding between peoples of diverse social, religious and ideological backgrounds. Through its application, it does offer the possibility of relief from hunger, want and fear, which are at the root of all the world's problems. The solving of human problems through science shall not lag behind the solving of material problems.

The future is in the hands of science. There are clear indications of this from the discoveries in biology, bio-technology, electronics, computers, space, materials science, sub-atomic physics and astronomy. Today, the conceptual edifice of science has a beauty and a kind of mystic appeal that makes a lasting impact on the mind. To pursue truth in all its varied aspects in the path of a genuinely scientific humanism -- with zest, courage and dedication to the best of one's ability and strength, is man's highest duty and obligation. All branches of science and learning can join in this venture of exploration. That is the greatest lesson science holds for us. That is also the greatest need of the world today.

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# Total Quality Management in Library and Information Services

Roshan Raina\*

## Introduction

Library & Information Managers (LIMs) are these days deluged with advice as to how to acquire and organise learning resources and satisfy the complex and ever increasing information needs of their users. However, to achieve their goal, the question of a resource constrained regime has to be kept in mind without sacrificing the interests of the users. The services offered, accordingly, have to be internally efficient and externally effective. It is in this context that the question of "Total Quality" becomes relevant in the "Management" of "Library Services."

## TQM in LIS

Application of Total Quality Management (TQM) approach, as such, in the context of Library and Information Services (LIS), seems to be comparatively, of recent origin. In my understanding, however, especially in the Indian Context it had its origins in LIS as early as 1931 when Dr. S.R. Ranganathan gave to the world of librarianship, his famous Five Laws. It is the Fourth Law, *Save the time of the Reader* which has similar implications as are advocated in the TQM process. His explanation for the term "Documentation" as pin-pointed, exhaustive and expeditious organization and retrieval of information is what is the sum and substance of the TQM approach in the Library context. The way he enunciated even his first three laws make the point amply clear that he had, way back in 1931, the element of "user satisfaction" (customer satisfaction) in his mind while pleading for the establishment, growth and development of the library systems and services.

## LIS Functions

A modern library of, today, is charged with three basic functions and these are :

1. Acquisition of knowledge/information;

2. Organisation of knowledge/information; and

3. Dissemination of knowledge/information.

The first two are behind the screen activities and are called house-keeping operations whereas the third one represents the on-the-screen activities called service-oriented operations. However, the user, directly or indirectly, is involved/affected/concerned with all the three. Since the TQM process concentrates on "user satisfaction", a study of the TQM approach in the context of each of these functions appears meaningful.

## Acquisition

The main activities involved in the "Acquisition" process are : 1. selection; 2. ordering; 3. receipts and payments; and 4. budget keeping. Libraries, generally, select learning resources for their libraries on the basis of i) User Requests/Requisitions; ii) Reviews Subject Literature; iii) Publishers Catalogues/Trade Literature/Bibliographies; and iv) Exhibitions/Approvals, etc. Experience shows that a library's holdings are rated better and more user oriented if most of the acquisitions are on the basis of i) above. But then the real situation is that in majority of the cases, the acquisition strength on the basis of i) above is lowest. In my opinion the reason and answer is available with us — the Librarians, whose preferred means of selection, definitely include these four, but (sadly) in reverse order. Their constraints being, most of the time, i) targetted (quantitative) numbers, ii) March and March like pressures, iii) Vendor patronage, etc. To overcome such pressures, LIMs may spend enough time in designing standard and well defined "acquisition policies" for ensuring qualitative (rather than quantitative) and balanced (rather than uneven) growth of their library collections through joint efforts with their respective user communities. The traditionally devised — so called-requisition slips are uninviting, clumsy, user unfriendly, difficult-to-fill and discouraging instruments for our users to exhibit interest in developing our collections by raising requisitions may be a point in the context.

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In ordering, notice the delight on the face of the user when he/she is informed that the document, he had requisitioned for acquisition last week is available for use. On the contrary, see how dejected he/she is when he/she on his/her repeated reminders, is informed that the document is "not traceable", "order has been placed", "will be available after some time", and so on. Some thought on standardizing our ordering criteria and procedure might make a difference in positive sense. No ordering criteria based on one's wishes/whims works to the satisfaction of the user.

It usually takes a long for a book to be made available to the user and paid after it has been supplied. Delays in both the aspects, directly or indirectly, affect the user. Evolving a workable procedure to arrive at a suitable lead time so that the document requisitioned is made available in the least possible time, to the user as well as the supplier is paid promptly, makes enough sense when user satisfaction is the key consideration.

Devising mechanisms to ensure balanced growth of library collections by appropriate budget allocation among various competing subject areas is an essential pre-requisite for healthy collection development. It leaves no scope for some areas to be very rich and some very poor.

#### *Organisation*

The main activities involved in the "Processing" are: i. Classification, ii. Cataloguing, and iii. Subject/key-word indexing.

All these are technical tasks and if performed with logic and user-approach in mind, will serve as helpful guides to the user in retrieving his/her documents/information expeditiously. In the present age when powerful computer devices and integrated library softwares are available, it does not make any good sense to assign a document a call number like xxx.xxxxxxxx yyy and so on. Ease and convenience of the user may be given a top priority rather than hold on to age old traditional approaches. Same is true of cataloguing and subject-indexing. We may no longer be fussy about punctuation marks and other such little useful aspects prescribed by catalogue codes rather should instruct the machines to do all sorts of permutations and combinations in doing all such jobs for our patrons in desired fashions. There is no point in being choosy about set/limited subject terms, key-words when free-text searches, boolean searches, etc are available.

#### *Dissemination*

Of the three main functions, this is the one that is very much directly related to users. Libraries acquire and organize their learning resources to meet the knowledge/information needs of their users. This function is carried out in different ways in different libraries — be they academic, public or special. Hence generalization of any kind would not make much sense here. However, it is essential in any type of situation to know, as clearly as possible, what the users' exact needs are so that all the library activities involved in resource development (acquisition) and utilization (organisation) are tailored to meet these needs.

Libraries usually render the following services to cater to such needs :

#### *General*

- i) Circulation (lending) services;
- ii) Instruction and assistance in the use of learning resources;
- iii) Reference and information services;
- iv) Inter-library loan services; and
- v) Reprographic services, etc.

#### *Special*

Documentation Services in the form of Current Awareness Services (CAS) and Select Dissemination of Information (SDI) Services are also rendered in most of the cases.

In CAS, generally the following services are rendered:

- a) Lists of recent additions to the library;
- b) Contents pages of latest periodical issues; and
- c) Forthcoming publications/Article Alert Services, etc.

In SDI, generally the following services are rendered:

- a) Select Documentation Bulletins;
- b) Select Bibliographic Compilations; and
- c) Literature Searches; manual, on-line, off-line, etc.

#### **Quality in Services**

##### *Circulation*

Without fail, this activity to facilitate issue and return of library materials to authorized patrons is



available in every library. Though different systems and procedures (manual or computer based) are used for the purpose in different situations, the emphasis seems to be in most of the cases on security aspects of the loaned materials rather than satisfying user queries. TQM presupposes that the systems in operation should by and large provide for quick and accurate information on i. where a particular document is at any given point of time; ii. when due for return, if issued; iii. how to reserve it; iv. subject-wise issue/return statistics; v. user category-wise/areas-wise issue/return statistics, etc so essential indicators for i. ensuring judicious & optimum use of the collections; and ii. further enriching the collection.

#### *Instruction and assistance in the use of learning resources*

Owing to the proliferation of information, multidisciplinary nature of subjects, complex nature of information sources and increasing need from the users, it will prove quite beneficial if users are continuously and regularly acquainted and updated with the learning resources held by the library in their respective area/s of interest rather than following one time and out-of-date one-way instructional approaches.

#### *Reference and information services*

In TQM approach, it is no quality if, for example, reference queries attended to by a library increased this year to 300 from 100 in previous year, if all the extra 200 queries were attended incorrectly. Mere statistics have no value in terms of quality. It advocates for "better" service rather than "more" service. Quality will, in fact, come once the library does stock-taking (by using methods like flow-charting, etc.) of all the 200 incorrect responses to enable the staff to understand the specific problems associated with the process of providing the service.

#### *Inter-library loan (ILL) services*

Though ILL is an age old concept in librarianship, why are the figures of such transactions very very low in libraries. In fact the figures in most of the cases continue to go down from year to year when, libraries' dependence on each other is increasing day-by-day. The situation in the West is somewhat different. Some of the reasons responsible for low profile of such figures in our situation are i. the lack of adequate and upto date locational tools; ii. lack of knowledge of the learning resources of the other libraries; iii. poor communication and document delivery mechanisms; and iv. lack of appreciation and understanding on the part of LIMs for ILL, etc.

#### *Reprographic services*

Experience has shown that liberal photocopying services rendered by the libraries have not only minimized document losses, page tearing, scribbling, marking, etc but have also attracted users to the libraries when assured of the document or its photocopy. Efforts to provide the service with minimum lead time and quality copy would be the elements, the TQM approach would be looking for within this service.

#### *Documentation services*

LIMs seem to have taken for granted that whatever they provide in terms of services or products to the users—be in the form of CAS or SDI—are taken/accepted by their users with the same objectives with which they are provided by the LIMs. Their contention might be true to the extent that they seldom try to seek user feedback. Also, the user community, on the other hand, take "something as better than nothing." This one way traffic cannot go further when, even in the library and information environment, competition has crept in from outsiders, users have become more information conscious and are willing to pay for quality information products and services. It is therefore high time, the LIMs wake-up, accept this challenge and take it up in all earnestness, employ new management concepts, marketing techniques and generate quality products and services to meet the need of their respective users rather than continue with issuing, ill designed, less appealing, illegible, routine products like in the form of "current contents", "current additions", "bibliographies", and so on.

#### **TQM and the People**

Any thinking on the TQM would be incomplete if the most crucial element—the people, responsible for making it happen are not given due attention. Quality will definitely come up when every individual in the library is taken into confidence and when all of them are made clear about the library's mission, goals and objectives. This element presupposes that the pursuit of quality must begin from the top down. Not compartmentalization, but total integration brings quality. Encouraging risk taking and driving out fear results in creativity. Training and retraining employees is an essential element in the quality process.

(Contd. on page 11)

# Mechanism for Accreditation

## A Viewpoint

M. Gopalakrishna Reddy\*

K.S. Chalam\*\*

The concepts of Accreditation and Assessment have been in use in the Indian context for quite some time. However, the initiative to make the concepts operational began with the National Policy of Education 1986 Programme of Action document that mentioned the setting up of an autonomous council on Accreditation and Assessment. The Programme of Action 1986 recommended that, "Excellence of institutions of higher education is a function of many aspects : self evaluation and self improvement are important among them. If a mechanism is set up which will encourage self-assessment in institutions and also assessment and accreditation by a Council of which these institutions are corporate members, the quality of process, participation, achievements etc, will be constantly monitored and improved.

It is proposed to develop a mechanism for accreditation and assessment for maintaining and raising the quality of institutions of higher education. As a part of its responsibility for the maintenance and promotion of standards of education, the UGC will, to begin with, take the initiative to establish Accreditation and Assessment Council as autonomous body. It will evolve its own criteria and methodology for accreditation and assessment. Its main functions will be catalytic, it will not be enforcing any given norms and standards. It will analyse and evaluate institutions and their performance to facilitate self-improvement. This Council will be supported by a professional Secretariat in the performance of its functions". (POA, P. 46).

Accordingly the UGC appointed a committee to recommend the mechanism to set up the Accreditation and Assessment Council (AAC) in 1987 with Dr. Vasant Gowarikar as the Chairman. The Committee gave its report in 1988 and it was put up for discussion at four regional workshops in the country. The first workshop was held at Andhra University during 27-28 October, 1988.

In the meanwhile the Parliament had passed the Act No. 1987 to establish the All India Council for Technical Education (AICTE). One of the important

mandates of the Act was to set up a National Board of Accreditation (NBA). The Council under the dynamic leadership of Prof. S.K. Khanna constituted the NBA last year. Even before the establishment of the NBA, the AICTE and the Department of Electronics had initiated some kind of accreditation of computer training institutes that came up in the private sector. It is reported that around 500 institutions out of 600 who have applied for accreditation have been "accredited" under 'O' level or the foundation level.

### Affiliation, Recognition, Accreditation

The experience of accreditation gained through these exercises brought out some confusion in the use of concepts like "affiliation", "recognition", "Accreditation", "regulation" and so on. The concept of affiliation is more than 100 years old in our country as it came to us along with the university education. The university system has developed a mechanism to affiliate institutions on the basis of a certain criteria. In fact all the higher educational institutions in the country have been functioning under this set up till the computer boom developed the so called training institutes in the private sector. These institutes have also been trying to legitimise their courses by getting some kind of "recognition" from government or a statutory body to market their courses. The concept of "recognition" used by these institutes is different from "affiliation". The affiliated institutes in the university system are a part and parcel of the university while "recognised" institutes are independent units with different curricula. The concept of "accreditation", an American concept, came to us through the concepts of autonomy, accountability and liberalisation. The concept of accreditation was evolved in USA in a different context. The functions of the accreditation organisations are similar to the "affiliating" functions performed by the universities in India. As the concept of affiliation was not popular in USA, they invented accreditation. Therefore, the popularity of the concept and its wider use depends upon the extent in which we impinge upon the affiliation functions of the universities as most of the technical institutions and the courses are a part of the university system now. The success of the NBA or AAC depends upon the popularity of autonomous colleges. It is only these colleges that go in for independent status and ultimately crave for accreditation for

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legitimacy and approval by the user community.

### **New Controversies**

The accreditation organisations, we are afraid, will bring new controversies and dual operations in the system of higher education in future. The problem of legal status of degrees awarded by universities, but not accredited, and certificates awarded by accredited institutions but not authorised to award degrees become an issue to be resolved by the government. Further, the state universities are established under the Act of a Legislative Assembly to offer courses and award degrees while the accreditation organisations established by central government impinge upon the autonomy of the university by asking the universities to get their courses accredited by the Council. Though the legal authority of the Central Act is much wider than the State Act, the finances of the universities and colleges come from the state budget. Therefore the state university has the authority and legal status to offer courses and award degrees. But with the establishment of NBA and AAC, the state universities are in a dilemma. In fact, the philosophy behind the accreditation is to certify and inform the public and government that the minimum standards of independent private institutions are ensured. The universities have academic bodies to conduct examinations, organise on-site visits, and to certify the standards of institutions affiliated to them. Now, this function becomes redundant. This does not mean that we should not encourage accreditation of institutions. But, the institutions that should come under accreditation be different from the ones which are under the control of established universities. There are several hundreds and thousands of independent institutions that are coming up in private sector and without any "regulation" by any legal body. They need to be accredited by the NBA and AAC. It can further strengthen its operations by encouraging autonomous colleges and institutions. Unfortunately accreditation has come into this country much before the autonomous colleges becoming popular. The success of the accreditation bodies depend upon the success of these autonomous colleges. This is exactly what the committee on Accreditation and Assessment Council mentioned in its report. It said that "While the central motive to the accreditation system has come from the requirements of college autonomy, it also answers the need for a systematic and regular means for assuring that colleges and universities are functioning effectively". This is different from the U.K. experiment of assessing the performance indicators of universities in providing grants to the universities.

### **Mechanism for Accreditation**

Now coming to the questions of developing a

mechanism to accredit the institutions of technical education, it is already mentioned in the preamble of NBA that certain norms and standards will be provided to certify the quality of the institutions and programmes. The committee on Accreditation and Assessment Council of the UGC has already indicated 12 qualitative criteria relating to the institutions activity and responsibility. It is mentioned that a provisional two year "candidature" status can be given to institutions after satisfying certain criteria which can be extended upto six years. The accrediting associations can be supported by annual fees from the candidates' organisations.

The process of management of the NBA should remain to be democratic in nature. It is suggested that a sixteen member commission can be elected at the annual meeting for a staggered three year term, with one third of the positions being vacated each year. The member institutions will be represented by the administrative head of the institution in the annual meeting to elect the commissioners. The Chairman of the Commission and Associate Chairman will be elected for one year term by the association representatives. To begin with the Chairman will be appointed by the AICTE. The NBA with the consent of the AICTE will appoint a Director of Evaluation to conduct the day to day affairs of NBA. His term of office will be for 5 years and could be terminated by the Commission for valid reasons. The NBA will be made to function on a zonal basis in course of time. The initial expenditure for the functioning of the NBA will be provided by the AICTE. Similarly the initial impetus will come from AICTE by selecting 20 good autonomous institutions as members of Accreditation Board.

Central government funding of institutions will be possible to those which are accredited. However, the state governments are free to fund, recognise and charter institutions but they will not be given central funds if they are not accredited. The Accreditation Board will in course of time develop linkages and positive influence on the standards of school level technical institutions and also other professional institutions in the country. The democratic process of the Board should provide opportunities to students, parents, professionals and the user industries to take part in the deliberations to decide the criteria of accreditation. This will ultimately make the concept of accountability operational through accreditation. It is also necessary to involve representatives and experts from international organisations to standardise the quality of technical education to reach international standards. It is hoped that this accreditation mechanism will promote independence and scholarship in and among the educational institutions in the country.

# An Approach to Syllabi in Theatre Education

Ravi Chaturvedi\*

## The Prologue

*Natya Shastra* describes theatre as a subject which deals with all the streams of knowledge prevailing in the world. It deals with all the aspects of human being and its relation with the society in totality. It cannot remain indifferent to any happening in the world of nature. It passes through every kind of human feeling and takes its 'subject' — which is the viewer, for a journey to the state of *Moksh* — the salvation. This is the point where the feelings of imaginative creation on the *Rangabhumi* are no different from the feelings of the audience, sitting in the *Mandapa*. This is the best form of art which, through imitation of nature, provides an opportunity for catharsis at the aesthetic level. It helps the human being in getting rid of his complexes in such a manner that he enjoys the soothing feelings. It is a therapy. It is the most effective media of communication. It is the best device for reflecting the changing world as well as changes in the world. It is an inorganic spiritual experience in totality.

If this art form is so powerful, which is capable of touching the human sensitivity at the deep rooted level, is its practice so easy? And, if such a force is made a subject of teaching and learning or for imparting knowledge, should it be handled casually? This is a serious question particularly when the sensibilities are changing so rapidly. It assumes further importance when such a delicate but powerful art form is made a part of education system, when student learns it with other streams of knowledge, and not in isolation, where he relates his theatrical experiences with other aspects of life, its science and principles. His sensitivity, as well as personality is more affected under such kind of situations. Now he is no more in an isolated world of theatre. He was never, but now he does not remain any more in isolation by his conscious effort. Here comes the question of what should be taught and how it should be taught.

## Syllabi — A Conceptual Image

We call it a syllabus. But do we really have a per-

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fect syllabus, suitable to our times? We are doing lot of experimental work at many levels, call it form or content or anything else, but at what cost? Is it not at the cost of making student a guinea pig of our experimental approach without any purposeful thinking? We really do not understand ourselves. As a student of theatre and now partly a teacher, I can say so. Otherwise, atleast the teachers, who belong to the same training institute, teaching in the same set up, would have not been so different from each other. Of course, there are few basic things which are common in teaching of theatre in all the institutions, departments of the universities and in specially conducted training programmes and workshops for amateurs. This is a matter for introspection as to why we could not formulate or identify at least a few common things at the level of advanced studies? This is a question to a teacher from himself as well as from the whole teaching community engaged in theatre teaching. Have we deviated from our role of a teacher or from our responsibilities to the society? A teacher cannot be excused for his historical negligence particularly when he is teaching a subject like theatre which not only reflects but affects the socio-cultural values of the young generation of cultural workers. "The role of teacher in this context is not going to be easy and smooth" as Prof. K Venkata Reddy underlines. (The Importance of Being a Teacher - *University News* P.5 of Nov. 28, 1994). "The teacher", he adds "should have a genuine interest in youth and understanding of psychology. He should be able to contribute to scholarship and advancement of the frontiers of knowledge. Apart from these traditional functions which continue to be as valid today as before, the teacher has to perform two new functions. First, he has to play an important role in the transformation of the education system through active participation in such programmes as restructuring of courses, examination reforms, faculty improvement, rural orientation, practical and relevant education. Secondly, he should have commitment to a society based on justice and should, therefore, strive for the inculcation of these values and extension of knowledge and skills to the society at large. In effect, the teacher should become an effective instrument in the process of development and social change. He should be a key factor in the transformation of our value system".



## **The Regional Factor**

The regional factors always affect the content, form, methodology, etc. But this is normal and common everywhere. In spite of this universal factor a particular nationality evolves its own methodology suitable to its own need and to fix its identity in order to carry it forward with time. However, it is slightly different in the methodology of teaching theatre. Maybe, the biggest reason for it is that, no conscious effort has so far been made to evolve it for teachers training in theatre. And consequently no methodology of teaching theatre could be evolved, while we are forced to recognise each other by virtue of constitutional statutes. Otherwise, I do not find any similarity in the course content imparted by the Department of Indian Theatre of Panjab University, Chandigarh and the Department of Theatre, Film and Music of Punjabi University, Patiala. Or, another example can be seen in the courses offered by the Sardar Patel University, Vallabh Vidyanagar near Anand and the School of Performing Arts of M S University of Baroda and Theatre Department of Gujarat University, Ahmedabad, and North Gujarat University of Saurashtra. The same thing can be observed in the universities of Maharashtra, whether it is Marathwada University at Aurangabad or Shivaji University at Kolhapur. The result is reflected in the qualities of their students, their productions and teaching standards. To my knowledge, sometime back, a magician used to teach the delicate subject of acting and mime in a university of Gujarat. We really need a body, autonomous in nature, to monitor the standards, formulated voluntarily by such institutions themselves, working actively in teaching theatre. We have an example of Bar Council of India, which recognises the various degrees of law awarded by all the universities in the country for the purpose of practice. I remember an important example of my own university, when the minimum percentage of attendance was waived in the Law College, the degree of LLB was derecognised by the Bar Council of India. Why can't we have such arrangement for ourselves, at least for teaching purpose. There are minimum qualifications for the appointment of teachers in Drama in every university, guided by the University Grants Commission, but can we compare a postgraduate of Punjabi University, Patiala with another from Panjab University, Chandigarh and so on? Shall we accept each other? Of course not. Somewhere, such feelings prevail and eventually often come out on surface.

## **The Syllabi in Modern Perspective**

In 1980-81, in the meeting of Academic Council of

National School of Drama, an integrated syllabus, prepared on the demand of students union was on the agenda as a last item for consideration. It was categorically rejected by couple of members of the Council with the remark that this is nothing but a document of total knowledge of the teachers in the School, spread in three parts for each year of training put together. It is scattered. It does not lead the student anywhere. It lacks vision. The students after going through it, in their meeting, also appealed to the school management that they really want to learn in an integrated manner, with a vision for theatre and for their own future, while in the present bunch of papers, one subject took them in one direction, and the other in another direction. Its obvious form did not remain a secret to any student any more. Unfortunately, no effort has been made till now to put it in a proper shape. It is understood that the teacher is just a dispenser of knowledge, while his delivery of knowledge should be supplemented by his spending more time diagnosing the learners' needs, motivating and encouraging them, and checking the knowledge acquired'.

The story is no different in other centres also. We know the nomenclature of the various papers prescribed for teaching with a broad outline of it. But, the concept of the contents is not spelt out properly. Neither are the essential books for text and reference recommended for their entire period of study. I myself found it very difficult when preparing the syllabus in my department for the undergraduate studies. But somehow, to my surprise, the problem was solved by the indications hidden in the minutes of the conference of Education Ministers and Education Secretaries of all the states and union territories in 1984 discussing the issue of linking culture with education. They suggested that the theatre teaching should be encouraged at the plus-two level and at the undergraduate level in combination with other subjects, such as sociology, anthropology, history, psychology, philosophy, etc. The very moment, idea groomed in our mind and our syllabus for theatre as a subject in the B.A. courses could get a shape where we have an orientational emphasis on history of the development of theatrical arts and reading plays, and staging a production with some practical work of acting and speech in first year to be taught in such a manner that it could combine with other subjects, and be not treated as a totally different one. So, it gradually goes in II & III year respectively. The subject was approved and accepted by the academic bodies of the University where, practically we did not have any representation to plead our case and



which satisfied the queries of noted scholars of other fields of knowledge. University of Rajasthan introduced Drama from the next session in B.A. courses, taking the lead and opening new vistas for other universities.

Here, we anticipate a sense of relief, when we think about the syllabus for higher and specialised training, since we will have students of at least three years background with a basic understanding of the subject and of course with a confidence of having more choice of alternatives for their career.

The theatre departments in respective universities should also approach such departments which are teaching dramatic literature to help them providing better understanding of the subject. For example, a team of selected students may go for a dramatic reading of the prescribed plays in these departments if staging is not possible. It can be done with bare movements. This can also be realised by such departments in form of specially conducted workshops in collaboration with the theatre department.

### Dual-Conscious Qualities

A theatre teacher should be, and should be consid-

ered, as person having dual conscious qualities. When he is entertainer, he is a different person, but when he is a teacher, he is something different. As an entertainer, he is responsible for his spectators. His accountability is limited to the particular production in a particular time. He can be rejected or glamourised. But, as a teacher, his accountability increases manifold, particularly when he is a theatre teacher in university system, where examination, with all its formalities, is an essential part of the system. Often, it is observed that the teachers mix up two things and get carried away with popularity of taste or satisfaction of their ego. Without doubt, theatre is for entertainment, but as a teacher, the emphasis should be on imparting and sharing knowledge, exchanging ideas, understanding the rich heritage of world theatre as well as innovating new techniques with an integrated approach to multi-dimensional perspective of knowledge.

Theatre for literacy, social theatre, theatre for therapy, the teaching methodology, are still the left out areas in our syllabus. Not even the most developed, richly equipped institutions of theatre training have ever thought about these aspects. These are also important components when thinking of contents of theatre training.

## Total Quality Management in Library and Information Services

(Contd. from page 6)

### Conclusion

From what has been stated here, it is crystal clear that LIMs will be successful in their mission if they accept the challenges posed by i) information explosion, ii) increasing and complex information needs of their clientele, and iii) continued resource constraints, with due care and consideration for "Quality" in an integrated manner rather than in a piece-meal approach. As is true with other service sectors, integrated quality management (or TQM approach) in the library context should not be misunderstood as a one-time approach but as a continuous process — very essential for improvement in all the library services aimed at resource development and utilization.

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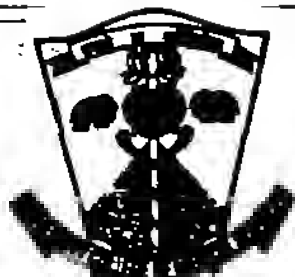
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# UNIVERSITY COLLEGE OF MEDICAL SCIENCES

(UNIVERSITY OF DELHI)

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PRINCIPAL

# Our Animal Wealth

**Dr. R.S. Paroda, Director General & Secretary, DARE, Indian Council of Agricultural Research, New Delhi delivered the Convocation Address at the third convocation of the Tamil Nadu Veterinary and Animal Sciences University, Madras. He said, "Our national animal wealth is immense, as at present it has over 28% of the world's large ruminant population and is number one country in goat population and number six in sheep population in the world. Its animal genetic resources in the form of species, breeds, varieties and strains are the richest and most enviable in the world. Its farm animal and poultry genetic biodiversity is varied and rich. Our country is one of the few in the world that has also contributed richly to the international animal gene pool." Excerpts**

Indeed, this University is the first in the country which exclusively caters to the requirements of Veterinary, Animal and Fisheries Sciences. By taking upon itself the responsibility for almost all aspects of animal agriculture including key areas like Biotechnology, Entrepreneurship Development, Agro-forestry, Wild Life Management, Bio-informatics and several others, this University is now all set to meet the farmers' social and economic needs in Veterinary Science and Animal Husbandry. Some of its future programmes worth highlighting include introduction of MBA course in Animal Business Management, Veterinary Nursing Course and B.Tech. in Aquaculture.

Agriculture would continue to be the most predominant sector of the Indian economy in decades to come. In order to ensure its potential-based and technology oriented growth, far more investments on research and development efforts would be imperative. In this endeavour, more investment from private sector would be desirable with an equally strong public sector commitment.

The equity, social and economic justice and harmonized normal and sustainable curve of growth would be expected only with well-thought of, well planned and executed research and development strategy. The strategy must rally around the conservation of natural resources so that these are available for their rational use on sustainable basis. To capitalise on the existing strength of the well-developed research and development, institutions both in the public and private, in the Centre and States, including availability of vast manpower (scientific, technical, supporting), cheap labour and the diversified agro-climatic conditions; modernisation of the system, human resource development, establishment of better linkages, critical gap filling, etc have become most essential for improved efficiency and to compete globally.

Institutional set up with need-based orientation and adjustments, commensurate with research, personnel and financial policies and appropriate research management systems, where each element moves in harmony to deliver its best to attain the highest possible

results within a given time scale, would be desirable. The first step in this endeavour would be to set up a demand driven research agenda institution, region, crop, commodity and discipline wise on a perspective plan basis with required amendments in policies — personnel, physical and financial. To keep with the pace and to be competitive nationally, regionally and internationally, frontier areas of technology would require pinpointed attention. Socio-economic, equity and gender consideration would be the major guiding principles alongwith productivity and sustainability considerations.

It is both a nationally and internationally recognised fact that the Indian National Agricultural Research Service (NARS) has served a very useful purpose starting from a single Institute (IARI) addressing to research and education needs at the National level to a network of institutions and universities addressing to the problem-oriented, location and crop/commodity specific issues. Nevertheless, in the fast changing environment, reorientation of agricultural research system with clear cut delineation of mandate and responsibilities to ensure far more problem-oriented, receptive, responsive and productive output is imperative to bring much needed commerce in agriculture. Therefore, a conscious view will have to be taken for the reorientation and modernisation of NARS with appropriate facilities, of course commensurate with critical scientific and technical mass, for ensuring dynamism in the system to be effective and visible in the service of the farmers. This obviously requires a policy in place and appropriate perspective planning for the next 2-3 decades based on rolling plan concept to accom-

moderate mid-course corrections. Implementation of the planned programmes on a five yearly basis will be desirable.

Complementarity and interaction among components within and between research and development efforts would determine the ultimate success, where livestock farming system would be an inbuilt mechanism on a sustainable basis. Also, orientation towards production to consumption system research, knowledge demand orientation and higher skills of management with effective technology generation, assessment, refinement, and transfer system would be the desired needs. This would call for an effective integration with required decentralised yet harmonized model of agricultural research and development. The integration would call for a programme oriented, matrix driven approach which would obviously cut across crops, commodities, divisions, disciplines and institutions. The harmonization would call for complementarity in research and extension efforts not only within the public sector organisation but also with the private sector, NGOs and the farmers. A matrix approach of management aims to synergise the interplay of various actors and interactive forces involved in a programme. In this approach, various concerned disciplines will have to cut across in a harmonious fashion so as to maximise overall system's efficiency and output. Under the umbrella of a R&D programme for specific agro-ecological, socio-economic and special settings, need-based interacting activities are undertaken in a holistic manner whose collective output is more than the sum of the output of individual activities when taken in iso-

lation. This approach ensures vertical and horizontal integration of systems' parameters and programme elements.

On changing time scale, the system will have to be dynamic to exploit opportunities by using natural endowments on a sustainable basis. The conceptual model of deriving the best out of the vast resources viz. scientific, technical, ecological, environmental will have to be judiciously used and managed in a way that these are in harmony with the environment. Sequentially, next issue required to be addressed is, who is expected to do what, how and when and what resources would be required keeping in view the sustainability of the productivity system on a long term basis.

Our national animal wealth is immense, as at present it has over 28% of the world's large ruminant population and is number one country in goat population and number six in sheep population in the world. Its animal genetic resources in the form of species, breeds, varieties and strains are the richest and most enviable in the world. Its farm animal and poultry genetic biodiversity is varied and rich. Our country is one of the few in the world that has also contributed richly to the international animal gene pool. Our contribution to animal production at global level is through Red Jungle Fowl, Murrah and Jaffarabadi Buffaloes, Sahiwal, Ongole, Kankrej and Kangayam cattle breeds and unique Jamunapari and Beetal goat breeds. Our Red Jungle Fowl is considered to be the progenitor of all the modern day commercial poultry layer breeds and strains. Thus, our famous buffalo, cattle and goat germplasm has contrib-

uted significantly to the well-being and prosperity of different countries. Almost all the new cattle breeds that have been evolved at different places in the world have genetic contribution from our zebu germplasm base. As a matter of fact with such a fabulous livestock germplasm wealth, India may act as a major player in enhancing animal production and productivity.

We are aware of the situation and have taken suitable conservation programmes by building up requisite capacity in scientific and technical spheres in the form of National Bureau of Animal Genetic Resources and its network units at different State agricultural universities. We are committed to develop this Bureau into a premier organisation with a focus on the activities like creation of information data banks and maintenance of inventory of all types of farm animal germplasm diversity through computerised interactive system of linkages with all the leading animal science institutes and organisations throughout the country and abroad, development of state, regional and national level germplasm repositories and gene banks and development of adequately skilled manpower and expertise by undertaking comprehensive training programmes on conservation.

No doubt, our Scientists have led the White Revolution by evolving new high producing milch breeds. Revolution in egg, meat and fish production is round the corner which would obviously enhance our net per capita animal protein intake which is presently one of the lowest in the world. To meet our ever growing needs we will have to come out with meaningful programme based strategic



plans by understanding the immense magnitude of the task that lies ahead. Indeed livestock would continue to remain the traditional pillar of our ICAR research programme but the emphasis should now change to integrated crop-livestock based production system in place of either sole crop production or sole livestock production system. In my opinion, by the year 2000 A.D. and beyond, our agenda and priority setting in Animal Science should cover the following areas and activities and that too in a mission mode manner.

By and large, information and knowledge on the "Form and Function" of India's vast, varied and rich indigenous animal genetic resources is either lacking or is incomplete and whatsoever is available does not represent the breed/type/line/strain in their natural habitats, which in any case also stand eroded. There is an urgent need to generate enough and right kind of information, on all such types of animal biodiversity and also to define and characterise them in a realistic manner through breed associations, and initiation and maintenance of Herd Books on each of them by involving all concerned. The National Data Bank, already established at NBAGR needs to be strengthened further in order to play its meaningful role.

The task undertaken by NBAGR of documentation, evaluation, conservation and utilisation of diverse germplasm of farm animals and poultry of different agro-climatic zones in the country through its VIII Plan Network programme by involving SAU's, Animal Husbandry Departments, ICAR Institutes/Project Directorates, State Farms, Gaushalas, N.G.Os and private entrepreneurs is very important and need to be

undertaken earnestly. These will further help in the development of National level Information Repositories and Data Banks on Animal Resources.

Suitable research pursuits are needed to understand and evaluate the intrinsic genetic worth and architecture at molecular level of our various indigenous animal and poultry breeds/types/strains, etc by generating suitable laboratory facilities. The National Gene Bank also needs to be developed in order to make all such efforts meaningful.

All types of breeding and selection methodologies should aim at improving the productivity per unit cost and that too at the farm level. At times our research and development efforts implemented even with the best possible intentions, have failed to benefit the majority of the rural people. Little attempt seems to have been made to understand the farmers' problems, their needs and the local environment, etc. It is, therefore, essential to understand and identify various bio-physical and socio-economic constraints 'affecting systems' productivity. Rapid Rural Appraisal Methodology can be applied with advantage in Farm System's Research, which should always be looked at from efficiency point of view in all its aspects.

Animal breeding is a dynamic process constantly being improved by updated and extended knowledge. Genetic changes, by selection, should be arrived at in making the farm animals more efficient in converting dietary energy into edible protein and fat. Introduction of sources of genetic variation other than those already included in the breeding programme has also to be considered, with increasing aware-

ness as well as demands for safe and 'natural' food supplies. There is a clear need to breed animals for disease resistance qualities and by identifying genes that influence disease resistance.

All Animal Science establishments may like to set a demand driven research agenda and capitalise on their research accomplishments. They should be known by their products and standard of knowledge and information so generated. All possible overlaps need to be removed and firm collaborative linkages should be established for better efficiency.

Livestock health contributes significantly in the economic growth and sustainable development of animal production system. The progress made over time has provided better diagnostic techniques, prophylactic vaccines, drugs and management systems to consolidate gains derived from the animal resource development programmes. Therefore, development of new varieties/strains of livestock, development of economic feeds, maintenance of healthy production cycles of livestock, control of livestock infectious diseases and provision of adequate health cover to the production programmes remain the main problems needing immediate attention for the development of flourishing and stable rural economy. Role of biotechnology needs no emphasis for pursuing it further in order to provide more efficacious vaccines and diagnostics for control of diseases. Research facilities already developed need to be further strengthened for research work on synthetic peptides, monoclonal antibodies, probes, etc. in viruses, bacteria and parasites.

For ensuring technology trans-



fer, development of suitable technology packages to fit in animal production systems at farmer's level in rural conditions would be essential. Time has come where

many researches need to be done at field level under rural conditions. To be effective, technology generation, assessment, refinement and transfer be properly linked.

been established. Another remarkable feature is the establishment of two laboratories — Animal Feed Analytical and Quality control laboratory and Avian disease diagnostic laboratory exclusively for solving the field problems of poultry farmers at Namakkal.

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## Excerpts from the Address

by

**V. Gnanaprakasam**

**Vice-Chancellor, Tamil Nadu Veterinary and Animal Sciences University, Madras**

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This university has, two constituent Veterinary Colleges, one at Madras and another at Namakkal and one College of Fisheries at Tuticorin, functioning under the umbrella of this university. There are 5 research farms and 25 peripheral centres located in different parts of the State for carrying out academic programmes, the basic as well as applied research relevant to our local conditions and also imparting training to farming community.

There are 1526 students on the rolls with as many as 324 girls.

In this convocation, a total of 705 graduates (Ph.D - 46; M.V.Sc. - 102; M.F.Sc.-15; B.V.Sc.-491; and B.F.Sc.-51)-611 boys and 94 girls are receiving their degrees, among them 639 belong to the Faculty of Veterinary and Animal Sciences and 66 to Fisheries faculty.

### Curriculum Development

Under the changing scenario, the academic curriculum needs to be modified not only to match the National and International standards, but also to keep pace with the fast development of science and technology so as to suit the needs of the industries. To cite a few, we

have introduced the following courses :

Ph.D. in Animal Husbandry Extension and Economics

M.F.Sc. in Fisheries Economics

P.G. diploma in Animal Business Management

M.V.Sc/M.Sc. in Wild life sciences.

We have also upgraded Veterinary College and Research Institute, Namakkal as Postgraduate Institute and introduced MVSc courses in 8 disciplines related to poultry industry.

### Faculty Improvement

To keep pace with the scientific developments taking place globally, the faculty members of the University are given greater opportunities to undergo special training and Post Doctoral training programme and also to attend various seminars, workshops, symposia etc, both at national and international levels.

To support academic programmes and research activities, a number of well equipped laboratories like Central Instrumentation Laboratory and Central University Laboratory at Madhavaram, had

Our Academic/Research activities are effectively supported by well furnished library/information centres. We have three libraries, one at Madras Veterinary College, other at Veterinary College and Research Institute, Namakkal and third at Fisheries College and Research Institute, Tuticorin, besides a University library. Besides we have Bio-informatic Centre where data bases and retrieval system are available. We have also online facilities with number of networks like Medline, Vet CD, ASFA, etc.

A newly started student Counselling and Monitoring Cell is offering guidance on the career opportunities to our students.

### Scholarships and Fellowships

Financial assistance in the form of scholarship/fellowships/ assistantships obtained from the Government of Tamil Nadu, ICAR, Tamil Nadu Veterinary and Animal Sciences University and also from certain private agencies to the tune of Rs. 15.3 lakhs had been provided to 650 students for prosecuting their studies.

### Extracurricular Activities

Apart from the Academic activities, the students of this university were given opportunities to participate in the various extra curricular activities, such as sports, NSS, RVC, Literary Association, social activities and cultural programmes.

Our university team won inter-professional volley-ball champion-

ship for two years consecutively.

## Research

With the help of various National and International agencies like ICAR, Department of Bio-technology, Government of India, U.G.C., National Wasteland Development Board, Department of Atomic Energy—Bhabha Atomic Research Centre, Bombay, private agencies, WHO, Overseas Development agencies etc, we are carrying out a number of innovative and beneficial R & D programmes to suit the need of farming community as well as industries.

## Salient Research Findings

### Animal and Veterinary Science

#### On production:

##### New strain

- \* Release of new varieties - Kattupakkam Red sheep and Kattupakkam white pig with better productive performance.

- \* Development of frost resistant-Tuber grass suited to Nilagiri climate.

- \* Release of Nandanam Quail-II with superior germplasm.

##### Technology

- \* Standardization of technique of Mozerella cheese.

- \* Development of Hypo-osmotic swelling test for sperm evaluation.

- \* Hamster Egg Penetration Bio-assay for assessing the fertility status of the bulls.

- \* Designing and development of a modified sausage stuffer.

- \* Technology development for preparation of quail pickles.

##### Management

- \* Timely agro-advisory fore-

cast helped the farmers to alleviate managerial problems of livestock and poultry.

- \* Identification of suitable goat breed-Telicherry for coastal and Jamunapari for plains.

##### Feed

- \* Identification and exploitation of certain newer resources such as deep litter, cage layer manure, sugarcane pith, tree leaves etc as feed for livestock.

- \* Replacement of conventional protein by silk worm pupae to an extent of 35 per cent in ruminant feeds.

##### On Health

- \* Standardization of PCR (Polymerase Chain Reaction) to detect leptospirosis from urine and parvo virus from faecal sample.

- \* Rapidlatex Agglutination Test for detection of antibodies against the virus of New Castle Disease, Infectious Bronchitis and Rinderpest.

- \* Development of Dot immuno assay kit for diagnosing Rabies.

- \* Isolation and characterisation of virus isolates of Blue Tongue disease.

- \* Standardization of plasmid profile analysis as an epidemiological tool.

- \* Schedule of Post bite Anti Rabies vaccination for bovines.

- \* Recording of *Ehrlichia - bovis* in cattle and perfection of culture technique.

- \* Identifying the etiology of infectious stunting syndrome as virus like particles.

- \* Identifying the etiology of poultry disease complex of 1993 as multifactorial like Infectious Bur-

sal Disease virus, Ranikhet disease virus, Chicken Anemia virus and *E.coli*.

- \* Identification of existence of transovarian transmission of Ranikhet disease.

- \* Diagnosis of the prevalence of Rift valley Disease in Chengai MGR district for the first time.

- \* Identifying the etiology for shrimp disease in and around Vedaranyam are as Baculo like virus.

- \* Existence of trans-ovarian transmission of Rinder pest virus—rare phenomenon in small ruminants.

- \* Production of a new IBD vaccine of bursal origin.

##### On Clinics

- \* Established a positive correlation between glucose intolerance, glycosylated haemoglobin and post parturient disease.

- \* Evolving the techniques of percutaneous pericardial drainage tube fixing.

- \* Standardisation of advanced contrast radiography technique.

- \* Finding the effect of pregnant mare serum Gonadotropin to degenerate the cystic ovary.

- \* High voltage slow activity (HVSA) in EEG as an aid in diagnosis of acute distemper in dogs.

- \* Haemodialysis preferred rather than peritoneal dialysis in canine uremia.

##### On Social Science

- \* Existence of ample avenue for service of private veterinarians.

##### Fisheries Science

- \* Formulation of shrimp feed for nursery rearing.

\* Development of a new hybrid ornamental fish namely **Black Platy**.

\* Development of a new hybrid iridescent fighter fish.

\* Designing of a low cost economically viable solar tent drier.

\* Standardization of techniques for preparation of a number of value added fish products.

### Hospital Management

Our university is having well equipped Hospital at Madras as well at Namakkal college for carrying out treatment and providing training ground for students in clinics. The clinic at Madras Veterinary College has attained the status of **Referral clinic**, by addition of a number of units like orthopaedic and dental units as well as sophisticated medical diagnostic equipments. Recognising this excellence, ICAR has granted a sum of Rs. 41.25 lakhs for the creation of the **Centre of Advanced Study in Clinical Medicine and Therapeutics**, for further infrastructural development.

To cater to the needs of peri-urban farmers/clients two Mobile Veterinary units and one peripheral Hospital have been put in operation.

### Extension Activities

To disseminate the scientific knowledge on Animal Husbandry practices and industrial development of animal products a separate Directorate of Extension Education with three Farmers' Training Centre, one Krishi Vigyan Kendra and a Department of Communication and Entrepreneurship is functioning in this university.

### Video Lessons

For the benefit of people hav-

ing less literacy, a number of Video lessons on various farm practices were prepared and made available for effective transfer of technology.

### Financial Aid

We are fortunate to have enough financial support so that an institution of this stature can grow and make improvement. The details of the financial support received for 1994-95 are furnished :

Source	Rs. in lakhs
Government of Tamil Nadu	1753.920
Government of India	124.420
ICAR	133.640
ICAR Development grant	117.000
NARP	7.879
Private agencies	18.570
Grand Total	2155.429

### Future Thrusts

#### Academic

\* Starting MBA degree course on Animal Industry.

\* Postgraduate diploma in Food and Dairy Engineering.

\* Starting specific educational programme at postgraduate level on Agrometerology.

\* Starting of Veterinary Nursing course.

\* Course on Economics and Epidemiology.

\* Course on Processing Technology of meat and fish.

#### Research

\* Production of Transgenic animals.

\* Establishment of Molecular biology laboratory.

\* Setting of Specific pathogen

free animals laboratory.

\* Microbial control in concentrated milk products through ultra centrifugation and reverse osmosis.

\* Studies on Mycotoxicosis with special reference to immuno assay, diagnosis and pathology.

\* Application of metabolic profile tests among dairy animals to assess the health status and production.

\* Genome analysis and restriction fragment length polymorphism (RFLP) in cattle/buffalo.

\* Establishment of National Bureau of Animal Genetic Resources (NBAGR).

#### Extension

\* Setting up Regional Disease investigation laboratory.

\* Setting up Regional feed analysis and quality control laboratory.

\* Initiation of distant education system to benefit the educated rural youth, both men and women.

\* Compiling of technical bulletin to update the knowledge of field workers.

\* Setting up of a well equipped audio visual laboratory.

\* Starting of correspondence course in Animal Welfare.

\* Strengthening of Publication Division.

\* Starting of laboratory technician course.

\* Commercial projects by utilization of APC fund

\* Implementation of Agricultural Human Resource Development project.

### Personnel Management Conference

Union Human Resource Development Minister Mr. Madhavrao Scindia called for more harmonious relations between the management of Indian industries and the labour force for a sustainable growth of Indian economy. He was inaugurating the 30th annual conference of the National Institute of Personnel Management (Calcutta chapter) in Calcutta recently.

Mr. Scindia said that the key to the success of an industry depended entirely on personnel management, and suggested that the workers had to be educated in all the aspects of 'work culture'. "If the industry makes progress, the workers will also derive benefit, but the employers must reward the meritorious".

Calling for harmonious industrial relations in the backdrop of economic liberalisation, Mr. Scindia said "the country is in the threshold of a virtual industrial transformation and India is today considered an exporter of highly-developed technical personnel".

He urged the company executives to give up an "adverse attitude" towards the employees. He also advised the workers unions to adopt "customer-oriented stance".

Fondly remembering Jawaharlal Nehru's contribution, as the architect of modern India in the formation of a solid infrastructural base in the country as early as 1960s besides harnessing the importance of the country's massive human resource base, Mr Scindia said unless more importance was given for the improvement of education and

health care system, as envisaged by Panditji, the scope for further progress of the nation's 900 million people was bound to be limited.

Mr Scindia said that the Centre had decided to convert the ancestral home of Rabindranath Tagore, known as Jorasanko Thakurbari, in the city a national memorial. The idea was to undertake total renovation of the "beautiful, traditional" building, expand the present museum and library facilities and create some additional features to make the memorial "a place of attraction and inspiration", he added.

Measures would be taken to properly maintain the art gallery and preserve document, artefacts and objects of art now under the care of the Rabindra Bharati society. There would be a documentation cell to index not only works of Tagore, but also of his contemporaries. The new set-up would create research facilities and might also put up a *son-et-lumiere* on Tagore. The whole thing would be put in place by 1996 or early-1997, he said and declared that there would be no dearth of funds. "After all, while taking big strides in industry and agriculture, we must also pay attention to our cultural heritage so that there is a sense of pride for the country and respect for a role model," he declared. He added that the West Bengal Government had assured him full co-operation in implementing the memorial concept.

Dwelling on the campaign for universal primary education and full literacy by the turn of the cen-

tury, the Minister said that several measures were being taken to this end. He said that the number of primary and upper primary schools, now 7.5 lakh in the country, would be increased further so that 3 to 4 crore of children in the 6-14 age-group who were yet to be enrolled in schools could be covered through greater proximity to their homes. The midday meal system would be started in a phased manner from this academic year.

Mr Scindia said that total literacy programme would have focus on women as the percentage of illiteracy was higher among them. He said about 11 crore adults were yet to be made literate. Referring to the Prime Minister's statement that the budget on education and health would go up from 3.5 per cent of the GDP to 6 per cent of the GDP, Mr Scindia said, "As the Human Resource Development Minister, I will ensure that education has to be accorded the highest priority in the national agenda".

### Rural Library Project

The Rajiv Gandhi Foundation (RGF) is reported to have taken up a new programme to establish in every village a "Rural library" that, apart from helping to sustain the total literacy campaign, would act as a repository of traditional knowledge and skills of rural India.

Each library would be financially self supporting and self reliant even though the Foundation would be putting in about Rs 25,000 towards setting it up.

The RGF is currently engaged in establishing about 250 libraries

in Andhra Pradesh, Madhya Pradesh, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

Each of these Libraries will have about 400 books, suitable furniture, fixtures and fittings such as clocks, MAPs, posters and quotations. Two daily newspapers would be subscribed by each library to make the village keep pace with the developments of events outside.

Young boys and girls are being trained as librarians. An operation manual and a simple set of rules have been designed for running of these libraries on a day to day basis.

Though the RGF support for a library would be for the first two years, each library is expected to be self reliant from the very beginning. A Nominal Membership fee is prescribed for its members. A reasonable amount is charged for skills training that the library may undertake for the villagers.

The Rural library was initially conceived as an institution to sustain the total literacy programme taken up in the villages. But on the basis of field responses, the concept was broadened to make the library a centre for documenting knowledge and wisdom from the villages.

### **Avinashilingam Institute Convocation**

The Sixth Convocation of the Avinashilingam Institute for Home Science and Higher Education for Women (Deemed University) was recently held at Coimbatore. Dr. Lakshmi Santa Rajagopal, Vice-Chancellor of the University, welcomed the gathering and presented a report of the various academic and other activities carried out in the university.

Speaking on the occasion, Dr. Rajammal P. Devadas, the Chancellor of the University, emphasised the need for reorienting the educational structure to meet the needs of the nation incorporating relevant inputs from Science and Technology to improve day-to-day teaching learning experience. She stressed that education should aim at human development which was the primary aim of the university. She emphasised the two approaches of human development : one, to meet the basic needs and minimal environment in which every person could live and work with dignity and creativity, and the other, to build up human calibre and character. She also said that the starting point should be achieving 100 per cent literacy to which the students and teachers of the university were contributing effectively. She appealed to the young graduates to take such decisions that would concern not only their well-being but also those who were dependent on them. They should also realise that the destiny of the nation was shaped by them and that life was a sacred trust which God had given to preserve in all its pristine beauty and glory, she added.

Sri P. Kolandaivelu, Special representative to the Govt. of Tamil Nadu at New Delhi, who delivered the convocation address, said that good womanhood was essential as the motherly instinct that was instilled in them by nature was able to unfold itself for the service of the nation. He said that enlightened women with training for right approach and sound reasoning and good character, would very much enhance the utility value of all educational institutions. He appealed to the young graduates to work hard so that they could make the twenty first century theirs.

At the convocation, Dr. Rajammal P. Devadas was conferred the honorary degree of D.Sc. by the Chandrasekhar Azad University of Agriculture and Technology, Kanpur and the Honorary Degree of Doctor of Humane Letters by the Ohio State University. The Founder-Chancellor, Ayya Dr. T.S. Avinashilingam Avargal was awarded the First Vivekananda Award posthumously by the Ramakrishna Mission Institute of Culture, Calcutta.

About 414 U.G. Degrees, 198 P.G. Degrees, 189 B.Ed. Degrees, 5 M.Ed. degrees and 49 P.G. Diplomas and 8 Diplomas in Early Education, 39 M.Phil. degrees and 18 Ph.D. degrees were awarded to the candidates of the university.

### **ISI Programmes 1995-96**

Indian Social Institute (ISI), established in 1951, is a centre for Research, Training and Action for Social and Economic Development. Its primary objective is to strive for the creation of a just social order where every person can experience and enjoy true justice, equality, liberty and fraternity as envisaged in the Constitution of India. In its efforts to attain this objective the Institute concentrates on the underprivileged sections of society, more particularly the scheduled castes, scheduled tribes and women. Its method of operation is based on an activist-professional culture that integrates professionalism with praxis. Thus it strives to serve as a praxis-biased resource centre that can assist grassroots level efforts for justice and liberation through its research, publication, training programmes and also periodic direct involvement in social action.

During 1995-96, the Institute proposes to organise 22 different



programmes. These programmes as asunder :

(1) Gender Sensitization Workshop for Domestic Working Women (25 June 1995); (2) Workshop on Labour Legislation (Aug. 8-11, 1995); (3) Workshop on Dalit Literature in Hindi (Aug. 10-11, 1995); (4) The Role of Documentation in Articulating the Concerns of Dalits and Tribals (Aug. 21-24, 1995); (5) Watershed Management for Ecological Balance (Aug. 21-26, 1995); (6) Gender Sensitization for Women's Groups and NGOs (Aug. 28-29, 1995); (7) Workshop on Health Legislation (Sept. 5-8, 1995); (8) NGOs and Development Programmes (Sept. 11-15, 1995); (9) Workshop on Urban Slums : Role of NGOs and Other Agencies in their Uplift (Oct. 5-6, 1995); (10) Workshop for Network Managers (Oct. 9-13, 1995); (11) Course on Research Methodology (Oct. 9-13, 1995); (12) NGOs and Development Programmes (Nov. 6-10, 1995); (13) Para-Legal Training Course (Nov. 6-20, 1995); (14) Agriculture for Small and Marginal Farmers (Nov. 13-18, 1995); (15) Workshop on Human Rights (Dec. 4-8, 1995); (16) Workshop on Gender Sensitization (Dec. 6-8, 1995); (17) Animal Husbandry and Dairy Animal Management (Dec. 11-16, 1995); (18) Workshop on Reservation Issues (Feb. 1-2, 1996); (19) Para-Legal Training Course (Feb. 5-14, 1996); (20) Workshop on the Responses of Religions to Today's Social Challenges (Feb. 19-23, 1996); (21) Workshop on Updating Contents and Presentation of Social Analysis (Feb. 27-29, 1996); (22) Course on Sustainable Agriculture, Animal Husbandry and Environment (Feb 1-25 March, 1996).

Further details may be had from the Training Programmes Co-

ordinator, Indian Social Institute, 10 Institutional Area, Lodi Road, New Delhi-110 003.

### **Kurukshetra Varsity R&D Fund**

The Kurukshetra University has created a Research and Development Activities Fund to augment the resources for giving a boost to research and developmental activities on the campus. The University has so far succeeded in generating the funds to the tune of Rs. 6 crores.

As part of the programme the University has decided to award freeships to the fifteen per cent of the total number of students on rolls on the campus and fifty per cent of total freeships would be reserved for the students belonging to rural areas of the state of Haryana. These freeships will entitle the awardees full fee concession for the full academic session and will be awarded on merit-cum-means basis.

The University has also decided to enhance the amount as well as the number of various scholarships. A lucrative scheme of yearly increase in the value of scholarships for Research Scholars will also be introduced. For all these schemes the University has earmarked a sum of rupees 35 lacs approximately.

The Research Scholarships for the first, second, third and fourth year would be given to the eligible scholars at Rs. 1200/-, 1500/-, 1800/- and Rs. 2100/- respectively out of the University Funds. University Merit Scholarships will be available to two postgraduate students securing first and second positions in the aggregate of B.A./B.Sc./B.Com. and B.Sc. Home Science Exams.

The University has also decided to double the amount of postgraduate stipends with an increase in number from 30 fresh and 30 renewed stipends to 40 stipends in both the categories. The University also proposes to provide one time financial help of Rs. 500/- annually to deserving students of University Teaching Departments to enable them to purchase books and other reading material. A sum of Rupees 1.65 lac has been allocated for both the heads.

### **M.Tech. Computer Science**

The Department of Computer Science and Engineering, Punjabi University proposes to start an M.Tech. (Computer Science) course of one and half years from the 1995-96 academic session with 15 candidates.

According to Dr. H.S. Sahota, Head of the department, admissions will be made on the basis of GATE/NET results. Candidates with BE of B.Tech in all branches of engineering or M.Sc. in physics, mathematics, statistics or operations research are eligible for admission.

### **Indira Gandhi Prize for Science Popularisation**

The Indian National Science Academy (INSA) has invited nominations for the award of Indira Gandhi Prize for Popularization of Science for the year 1996.

The prize will be awarded for outstanding work by an individual for the popularization of science in any Indian language, including English. The nominee must have had a distinguished career as a writer, editor, journalist, lecturer, radio or television programme director, film producer, science photogra-

pher or as an illustrator, which has enabled him/her to interpret science (including medicine), research and technology to the public. He/she should have a knowledge of the role of science, technology and research in the enrichment of cultural heritage and in solution of problems of humanity. Work already recognised for any other award will not be accepted.

The prize is open to any Indian national residing in the country and will carry Rs. 10,000.00 in cash and a bronze medal. The prize winner will be expected to deliver a lecture at the venue to be fixed by the Academy. Nominations for the award of prize may be made by the Fellows of INSA, Vice-Chancellors, Deans, Principals, Directors of leading scientific institutions and National Laboratories and Editors of Indian Science Journals in the prescribed proforma which will be supplied on request.

The nomination form duly completed in all respects be sent so as to reach the Secretary, Indian National Science Academy, Bahadurshah Zafar Marg, New Delhi-110002 latest by July 15, 1995 indicating on the envelope "Nomination for Indira Gandhi Prize for Popularization of Science".

### **Gujarat Vidyapith and Weaker Sections**

Gujarat Vidyapith has recorded a major achievement in its efforts at empowerment of weaker sections of society. 89 students, including 17 girls (19 S.C. students, 61 S.T students & 9 OBC students) who secured their master degree with 55% marks from the Gujarat Vidyapith during the past five years have been selected as lecturers in various affiliated colleges of different universities in Gujarat. The SC, ST and OBC students who

were selected in different colleges as lecturers constitute nearly 89% (80% SC and ST) of the total 102 students selected as lecturers in last five years. This is due to feeder institutions of the Gujarat Vidyapith in rural areas and promotional work of SC and ST cell of the Vidyapith.

### **WRIC Training Programmes**

The Western Regional Instrumentation Centre (WRIC), Bombay, an autonomous institution of the University of Bombay, funded by UGC, proposes to organise training programmes for different target groups. These are (i) "Maintenance of Optoanalytical Instruments" for USIC and university personnel in West Bengal and North Eastern States, at USIC, University of Burdwan, Burdwan (June 26-July 1, 1995); and (ii) "Test, Maintenance and Calibration of Optical & Analytical Instruments" for USICs in Rajasthan and teachers of Jodhpur University and colleges, at USIC, Jai Narayan Vyas University, Jodhpur (July 24-29, 1995).

Further details may be obtained from Dr. D.N. Patkar, Director, W.R.I.C., University of Bombay, Vidyanagari, Bombay-400 098.

### **Yojana Essay Competition**

To commemorate the Golden Jubilee of the United Nations in Oc-

tober 1995, Yojana is organising an essay competition titled "India and the UN".

The competition has two categories: General Category — open to all, and the Students' Category for bonafide college and university students. The participants in the Students' Category are to submit a certificate from the Principal/Head of the Institution. The articles should be typed in double space with adequate margin on one side of the page and submitted in duplicate. The Open Category essay should be 2000-3000 words, while for the Students' Category, the limit is 1500-2500 words.

The first, second and third prizes for the Open Category are Rs. 5000, Rs. 3000 and Rs. 2000 respectively, while those for Students' Category would be Rs. 3000, Rs. 2000 and Rs. 1000.

The last date for receipt of entries is July 15, 1995 and these should be sent to the Chief Editor, Yojana, Yojana Bhavan, Sansad Marg, New Delhi-110 001.

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### **We Congratulate ....**

**Dr. (Mrs.) Pankajam Sundaram who has been appointed Vice-Chancellor of Mother Teresa Women's University, Kodaikanal.**

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## **News from Agricultural Universities**

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### **Mahatma Phule Varsity Convocation**

The former Vice-Chancellor of the University of Pune, Dr. Shridhar Gupte, delivered the convocation address at Mahatma Phule Krishi Vidyapeeth (MPKV) at Rahuri in Ahmednagar district recently. In his address Dr. Gupte

emphasised the need to include agriculture science at schools in order to put into practice the ideals of the great social reformer Mahatma Jyotiba Phule. He said India was primarily an agrarian country, with 70 per cent of its population depen-

dent upon agriculture for livelihood. Hence it was the responsibility of agricultural universities to bring about social and economic changes in society. But for this, it was essential that the relevant knowledge reached society, he maintained.

Mr. Gupte expressed concern over the high percentage of illiteracy in society. He said, illiteracy was a major hurdle in the progress of society. It was essential that primary and secondary education was extended to all sections of society, in order to achieve social development. He added that "students could bring about a social metamorphosis by reaching out to people".

Dr. Gupte was all praise for the research work on Water Management carried out by the Research Wing of the MPKV in coordination with the Indian Council for Agricultural Research (ICAR). Drawing attention to the acute scarcity of water in the state, he opined that with the extension of irrigation facilities under different sources, there had been unbridled and injudicious use of the precious commodity leading to water logging and salination of land. He advocated a tariff on water.

Dr. Gupte lamented that information on agricultural research and other activities did not reach farmers. Giving an example, he claimed, that although the pomegranate 'Ganesh' was developed in 1936, this information could not reach peasants until 1977. Efforts must be made to develop a network of institutions for the speedy dissemination of research results to the peasantry, he advocated.

Dr. Dorge, Vice-Chancellor of MPKV, in his introductory speech said the university had adopted ba-

sic changes in its academic programmes and evaluation system, to have a need-based curriculum in keeping with the times. He said the university had done a commendable job in developing different varieties of 74 crops during the last 25 years. He claimed that in view of acute water scarcity, a phenomena that has been observed time and again in Maharashtra, the University had carried out research on efficient water management and developed a technique for drip and sprinkler irrigation in Maharashtra. 35,000 hectares of land was being irrigated under the new technique, needing minimum water for crop cultivation, he said.

Dr. P.C. Alexander, Governor of Maharashtra and Chancellor of the University, who presided, conferred degrees on 843 candidates who were present and to 1026 candidates in absentia. Mr. Harshavardhan Patil, State Agriculture Minister, gave away medals and cash prizes to 25 meritorious candidates.

### **Agri. Res. Information System for PAU**

Punjab Agricultural University is reported to have received re-

search projects worth Rs. 162.99 lakh.

According to the Vice-Chancellor, Dr. A.S. Khehra, the Indian Council of Agricultural Research (ICAR), has sanctioned a project for the establishment of an agricultural research information system (ARIS) at the zonal research stations as well as on the campus.

The establishment of ARIS will help coordinate research activities being carried out on the main campus and the regional research stations. The ICAR has provided a sum of Rs. 50 lakh for this project.

The ICAR has granted another Rs. 18 lakh for the replacement of vehicles at the zonal research stations. The Union Ministry of Food and Processing has provided Rs. 70.50 lakh to the Regional Extension Service Centre for the purchase of a state-of-the-art mill from Japan. This will provide researchers of the College of Agricultural Engineering the opportunity to study milling systems and make changes to adapt them for the local paddy varieties and climatic conditions.

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## **News from UGC**

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### **Countrywide Classroom Programme**

Between 22nd June to 30th June, 1995, the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The Programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

#### **1st Transmission**

**6.00 a.m. to 7.00 a.m.**

**22.6.95**

"The World of Complex Compounds"

"Understanding the Cerebral Palsied Child"

"Indian Literary Sensibility"

**24.6.95**

"Tennessee Williams - The Human Dramatist : 'The Glass

(Contd. on page 26)

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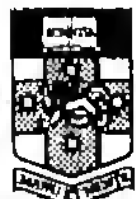
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University

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Indian Merchants' Chamber Marg,  
Churchgate, Bombay 400 020  
27 June 1995, 12noon - 8pm  
28 June 1995, 10am - 5pm

## NEW DELHI

Ashok Hotel  
'Cocktail Lounge'  
50 B Chanakyapuri,  
New Delhi 110 021  
30 June 1995, 12noon - 8pm  
1 July 1995, 10am - 5pm

## BANGALORE

Taj West End Hotel  
'The Ballroom'  
Race Course Road  
Bangalore 560 001  
4 July 1995, 12noon - 8pm  
5 July 1995, 12noon - 8pm

## MADRAS

Ambassador Pallava Hotel  
'Dynasty Hall'  
53 Montieith Road  
Madras 600 008  
7 July 1995, 12noon - 8pm  
8 July 1995, 12noon - 8pm

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Please note that no scholarships are available and that places in Medicine are confined to MBBS.

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"Career Counselling : Performing Arts"

"Protection of Japanese Crested IBIS"

**25.6.95**

"Art During Renaissance"

"The Potato Eaters - Part II"

"The Week Ahead"

**27.6.95**

"The Physics of Music : The Magic Flute"

"Heritage India - Part 5: Contemporary Society"

"Lifeline"

**29.6.95**

"Flocculation"

"Bhavai - The Folk Drama of Gujarat"

"The Growth of a Poet : William Wordsworth - Part I"

**Ind Transmission**

**1.00 p.m. to 2.00 p.m.**

**22.6.95**

"Keeping the Tracks Fit - Part I"

"Making of a Newspaper - Part III : News and Views"

"A World of English : Part 7 : Say it with Flowers"

**23.6.95**

"Concretising Algebra - Part II"

"Trinidad and Tobago - A Dialogue in Development"

**24.6.95**

"Musical Notes and their Origin"

"He Who Directs"

"The Week Ahead"

**25.6.95**

No Telecast

**26.6.95**

"S.N. Bose - The Scientist with a Mission"

"Consumer Protection"

**27.6.95**

"Fluorosis - A Threat"

"The Beginning of a New Movement"

"Oxygen Radicals and Antioxidants - Part VIII : Oxygen Free Radicals and Environmental Pollution"

**28.6.95**

"The Gene Story"

"Values of Reading"

"Iron in the Cells"

**29.6.95**

"Keeping the Tracks Fit - Part II"

"Making of a Newspaper - Part IV : Newspaper Structure"

"A World of English - Part 8 : Talk about Town"

**30.6.95**

"Geometry Made Simple"

"Let Freedom Be"

**Hindi Telecast**

**प्रातः 6.00 से 6.30 बजे तक**

**23.6.95**

"सृजनहार"

**26.6.95**

"रेगिस्तान में कालासोना - भाग-1"

**28.6.95**

"रेगिस्तान में कालासोना - भाग-2"

**30.6.95**

"कुसुमित केकटस : मेसेम्ब"

"लिचेन"

## **New Members**

The Government of India has appointed six new members to the University Grants Commission. They would have a term of three years each beginning May 30.

The members are : Prof. S.L. Goel, Panjab University, Chandigarh; Prof. P.S. Bisen, vice-chancellor, Jiwaji University, Gwalior; Dr. Y.C. Simhadri, former vice-chancellor, Nagarjuna University, Guntur; Prof. R.P. Kaushik, Jawaharlal Nehru University, New Delhi; Prof. Basheeruddin Ahmad, vice-chancellor, Jamia Millia Islamia, New Delhi; and Dr. M.S. Valiathan, Director, Manipal Academy of Higher Education, Manipal.

## **News from Abroad**

### **World Hindi Conference**

The Fifth World Hindi Conference will be held in Trinidad & Tobago (West Indies) on 28 March-1 April, 1996, under the auspices of the Hindi Foundation of Trinidad & Tobago Inc. in collaboration with the Faculty of Arts and General Studies, the University of the West Indies, St. Augustine, Trinidad. The conference coincides with the 150th Anniversary of the Arrival of the first batch of Indians from India to this island on the 30th May, 1845 in the ship called "Fatel Razack". They have since made it their

homeland and adapted themselves to this country and have contributed significantly to the development of the nation.

The Hindi language is taught in about 165 Universities in 35 countries outside India. World Hindi Conferences are held to define and describe the role and function of the Hindi language in the world as a language of modern communication and as a language of cultural and literary expression. This conference proposes to high-

light Hindi as a language of identity for the people of Indian origin in other countries. It has a specific role in the Indian diaspora as a link between the different categories of speakers/learners. The conference also aims at providing a forum to all concerned to highlight the significance of the Hindi language in their context and to discuss issues and problems related to the use of the language, so that it can develop as a language of diaspora studies.

The major objectives of the conference are: (1) To highlight the significance of Hindi as a regional, national and international language; (2) To examine the role of Hindi as an expression of culture and to assess the literary contribution of speakers/learners all over the world to the language; (3) To bring to light the modern roles of Hindi as a language of education, communication, administration, etc and to search for better ways of implementation; (4) To evaluate Hindi as an expression of cultural identity and to foster consciousness and appreciation of cultural heritage through Hindi; (5) To stress the relevance of the Hindi language in the Caribbean region as an instrument of cultural exchange in the region; (6) To assess the problems of teaching and learning of Hindi as a second/foreign in its various roles and suggest ways of improvement; and (7) To disseminate information of the developments in Hindi in the field of publication and advancements made in computer technology for Hindi and Indian languages.

The four thrust areas of the conference are :

(A) *Language* — Structural analysis of Hindi, Functional roles of Language — educational, administrative and commercial lan-

guage, Teaching methodology, Computers in language study and research, Application aspects of language viz. translation, lexicographical studies etc., Problems of modernization and standardization, Language varieties, Hindi as a world language — Prospects and problems, and Linguistic Indian diaspora — Scope and problems.

(B) *Literature* — The literary heritage of Hindi and its relevance to the modern world, Trends of modern Hindi literature, Hindi literature from other regions, Translation as a link between regions, Influence of their literatures on Hindi, Literature genres, Comparative Literature, and the concept of World Hindi literature and diaspora studies.

(C) *Culture* — Culture and heritage, Media as a link, Art forms as a cultural heritage : preservation and innovation, Indians in other countries : Problems of identity and integration diaspora studies, India as a role model for people living outside, Indian culture changes and modernization, Regional identity and cultural unity.

(D) *Relevance of Hindi in the Caribbean* — Problem of identity, Functional basis and everyday use: Administrative policies and voluntary efforts, Caribbean Hindi literature, Teaching methods for the Caribbean, Heritage and preservation of culture through language and literature, including devotional literature, Standard Hindi and spoken forms: conflict or complementation?, Language maintenance: Issues of attitude, and Distance education.

Further details may be obtained from Prof. V.R. Jagannathan, Chairman, Academic Affairs Committee, Department of Language,

Faculty of Arts, The University of the West Indies, Trinidad.

## Asian Science and Technology Congress 1995

The Federation of Asian Scientific Academies and Societies (FASAS), the Third World Network of Scientific Organisations-Asia Office (TWNISO-Asia), the Confederation of Scientific and Technological Associations in Malaysia (COSTAM), and the Malaysian Scientific Association (MSA) are jointly organising the Asian Science & Technology Congress 1995 (ASTC '95) to take stock of the scientific and technological developments and to plan and implement programmes for a sustained industrial development into the 21st Century. The theme of ASTC '95 is "Innovative Technology for an Industrial Economy". It will be held from December 5-7, 1995 at Kuala Lumpur, Malaysia.

The programme of the Congress will comprise keynote addresses, plenary lectures and four concurrent symposia on Renewable Resources hosted by Malaysian Scientific Association (MSA), Biodiversity hosted by (INSA), Biotechnology hosted by National Academy of Sciences, Republic of Korea, and Advanced Materials hosted by Chinese Academy of Sciences.

Plenary lectures will be presented on (i) Science Policy on sustaining industrial development in the Asia Pacific region, (ii) Transfer of Appropriate Technology, and (iii) Commercialisation of Research and Technology.

Further details may be had from the ASTC's Secretariat, C/o Malaysian Scientific Association, POB 10911, 50728, Kuala Lumpur.

# Jamia Hamdard

(HAMDARD UNIVERSITY)

Hamdard Nagar, New Delhi-110 062

## **ADMISSION NOTIFICATION 1995-96**

Applications for admission to the courses mentioned below are invited from the eligible candidates on the prescribed admission form :

### **MASTER'S COURSES**

1. *M.Sc. In (a) Bio-Chemistry, (b) Environmental Botany & (c) Toxicology*
2. *M.D. In (a) Mualljat (Medicine) & (b) Ilmul Advia (Pharmacology)*
3. *M.Pharm. In (a) Pharmaceuticals, (b) Pharmacology, (c) Pharmaceutical Chemistry & (d) Pharmacognosy and Phytochemistry*

### **BACHELOR'S COURSES**

(10+2 with Physics, Chemistry & Biology : 50% in aggregate)

1. **Bachelor in Pharmacy - 4 years**
2. **B.Sc. Nursing - 4 years**
3. **Bachelor in Unani Medicine and Surgery (B.U.M.S.) - 5½ years**

### **DIPLOMA COURSES**

1. **Diploma in Pharmacy (D.Pharm.) - 2 years (10+2 with P.C.B., 50% in aggregate)**
2. **Diploma in Nursing & Midwifery - 3 years (10+2)**

### **PRE-TIBB - One year**

Fazil (Deoband, Alim (Arabic) or Alimyat (Nadwa) or Farighul Tehsil from a Dars-e-Nizami Madrasah recognised by Jamia Hamdard.

The request for "Bulletin of Information" and Admission Form may be sent to the Registrar alongwith a self-addressed envelope (10 x 12") with postage stamps worth Rs. 15/- duly affixed and a Bank Draft for Rs. 100/- drawn in favour of the Registrar, Jamia Hamdard, Hamdard Nagar, New Delhi payable at New Delhi. The form and "Bulletin of Information" can also be obtained on cash payment of Rs. 100/- on any working day from the Reception counter of Jamia Hamdard from 1st of June 1995. The application, complete in all respects along with an Entrance Test Fee of Rs. 150/- (non-refundable) in the form of a Bank Draft drawn in favour of Registrar, Jamia Hamdard, Hamdard Nagar, New Delhi-110 062 may be sent to the Registrar of the University so as to reach him on or before 30th June 1995.

The "Bulletin of Information" and Admission Form may also be obtained on cash payment of Rs. 100/- from the below mentioned centres :

1. **City Centre (Jamia Hamdard)**  
35, Ferozeshah Road, New Delhi-110 001.
2. **Maktaba Jamia Limited**  
Urdu Bazar, Jama Masjid, Delhi-110 006.
3. **Business and Employment Bureau**  
Hamdard Building, Asaf Ali Road,  
New Delhi-110 002.
4. **Friends Book House**  
Shamshad Market, A.M.U., Aligarh (U.P.)

Dated : 26 May 1995

**Dr. M. Hamidullah Bhat**  
**REGISTRAR**

### A Valuable Addition

Buddha Prasad Chetia\*

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K.R. Parthasarathy. *Basic Graph Theory*. New Delhi, Tata McGraw Hill, 1994. Pp. ix+558. Rs. 96.00

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The branch of mathematics known as *graph theory* is about 260 years old. It was Euler, a giant of eighteenth century mathematics, who for the first time used the notion of graphs to solve the famous Königsberg Bridges puzzle in 1736. Euler's success perhaps enthused others to use this notion in solving some other entertaining puzzles like the Ferryman's puzzle, the puzzles of three jealous husbands, and three bad neighbours, and the puzzle relating to one of the Platonic bodies, namely, the regular dodecahedron. The last of these puzzles was tackled by Hamilton (1805-1865), a forerunner in the field of modern mathematics, by using graphs. The famous four-colour problem which continued to intrigue mathematicians till the seventies of this century also belongs to the domain of graph theory.

Besides Hamilton, some other prominent nineteenth century mathematicians including Kirchhoff, Cayley, Jordan and Sylvester took interest in graph theory. Kirchhoff was the first to show that graphs could be successfully used in problems of science in addition to

the so-called puzzles, and he demonstrated in 1847 the power and scope of graph theory by applying it in the study of electrical networks.

Gradually graph theory proved useful in the study and solution of a host of problems arising in diverse contexts. In fact it is this applicability aspect that has helped its rapid growth and expansion over the recent decades, and it has now made its appearance in diverse fields like economics, psychology, biology, engineering, operational research, anthropology, physics, chemistry, linguistics, computer science, etc. etc. One of the main reasons for wide applicability of graph theory is that binary relations among objects can be very conveniently represented by graphs, and so graph theory serves as a mathematical model for any system involving a binary relation. Graph theory is also intimately connected to many other branches of mathematics including group theory, matrix theory, numerical analysis, probability, topology and combinatorics.

During the last forty years or so graph theory has consolidated its own identity as an independent branch of pure mathematics. The diagrammatic representation of

graphs has lent an intuitive and aesthetic appeal to the theory, which, I believe, is one of reasons to attract the pure mathematicians to study it for its own sake.

Graph theory as it stands today may be divided into two parts—*Basic Graph Theory* and *Applications of Graph Theory*. The first part has already found a place in the compulsory pure mathematics curriculum, at least at the postgraduate level, of some Indian universities including my own (Gauhati University). While introducing a new topic in a formal curriculum one often faces a problem—the problem of having a book suitable for the student as well as the teacher. The first impression I had while going through K.R. Parthasarathy's *Basic Graph Theory* was that the curriculum maker's anxiety might be lessened to a great extent so far as graph theory is concerned. The book under review contains enough material for courses on graph theory at different levels—undergraduate, postgraduate and M.Phil of Indian universities.

The book contains fifteen chapters arranged in a logical sequence: (1) Graphs, Subgraphs and Components, (2) Degrees and Distances, (3) Operations on Graphs, (4) Trees and Cycles, (5) Connectivity, (6) Planarity, (7) Eulerian and Hamiltonian Graphs, (8) Matchings and Factorizations, (9) Colourings, (10) Packings and Coverings, (11) Perfect Graphs and Ramsey Theory, (12) Matrices and Vector Spaces, (13) Graphs and Polynomials, (14) Digraphs, and (15) Networks. Chapters 11 through 15 deal with some special (or advanced) topics

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\*Professor and Head, Gauhati University, Guwahati- 781 014.

of Graph Theory. I think that these topics will be of interest to the more ambitious reader. The first ten chapters constitute what may be called the core graph theory for the beginner — of course with a moderately ambitious goal.

Each chapter begins with a short introduction or motivation to the material covered in it, and then the material is presented with systematic sectionization and numbering of definitions and propositions. At the end of each section is given a set of *exercises*, and each chapter ends with a set of *references*. Dia-

grams are in plenty as expected in a book on graph theory.

As regards presentation of the material, points of discontinuity or nonuniformity are rare to find, specially in the first ten chapters. In the last five chapters as well, the author has tactfully and efficiently tried to avoid the possible jerks and bumps. A reader with a higher degree of maturity and sophistication should not feel these jerks and bumps at all. However, I must say that the choice of material for these chapters is quite arbitrary. But I must also say that the author of

such a book must be given the liberty to make his own choice for including some special topics. In general the author has been successful to instil in the book a flavour of classroom teaching as regards details in presenting the proofs of many fundamental propositions on graph theory.

I have no hesitation to say that K.R. Parthasarathy's Basic Graph Theory is a useful and valuable addition to the existing literature on a comparatively young and fascinating branch of mathematics.

## Books Received

1. Basak, N.N. (1994). *Surveying and levelling*. New Delhi, Tata McGraw Hill, 549p., price not stated.

2. Cameron, Kenneth Neil. (1995). *Dialectical materialism and modern science*. New York, International Publishers, 245p., \$ 10.95.

3. Chandra, A K. (1994). *Introductory quantum Chemistry*. Ed 4. New Delhi, Tata McGraw Hill, 389p., Rs. 120.00.

4. Devaraja, N K. (1993). *The limits of disagreement : An essay on reasoning in humanistic disciplines*. Shimla, Indian Institute of Advanced Study, x, 221p., Rs. 200.00.

5. Kapur, J.N. (1995). *Quality in higher education : Measurement and assurance (Criteria for excellence in higher education)*. New Delhi, C V Kapur Education Foundation, vi, 49 p., Rs. 50.00.

6. Khan, M Y and Jain P K. (1994). *Theory and problems of management and cost accounting*. New Delhi, Tata McGraw Hill, ix, 717p.,

Price not stated.

7. Kulkarni, G R. (1995). *Management information reports for operating managers*. Ed 2. Calcutta, Institute of Cost and Works Accountants of India, xiv, 178p., Rs. 150.00, \$ 37.50.

8. Made Gowda, J. (1994). *Financial and managerial accounting*. Davangere, IMP Publishers, 324p., Rs. 150.00.

9. Manohar Rao, M J and Balwant Singh. (1995) *Analytical foundations of financial programming and growth oriented adjustment*. Bombay, Development Research Group, Dept of Economic Analysis and Policy, Reserve Bank of India 111p., Price not stated.

10. Meredith, Geoffrey G and Others. (1982). *The practice of entrepreneurship*. New Delhi, Sultan Chand & Sons, ix, 213p., Rs. 75.00.

11. Parikh, Ashok. (1994). *An approach to monetary targeting in India*. Bombay, Development Research Group, Dept of Economic

Analysis and Policy, Reserve Bank of India, 27p., Price not stated.

12. Paul, J C. (1995). *Consolidated Financial Statements of holding companies*. New Delhi, S. Chand & Co., 232p., Rs. 80.00.

13. Prasad, Hari Mohan. (1995). *Objective English for competitive examinations*. New Delhi, Tata McGraw Hill, x, 498p., Rs. 75.00.

14. Rajesh. (1995). *Extension education in Colleges & Universities in India: Status & prospects*. Delhi, Student Aid Publications, 170p., Rs. 120.00.

15. Sangal, Rajeev. (1995). *LISP Programming*. New Delhi, Tata McGraw Hill, xii, 231p., Rs. 120.00.

16. Sen, Rathindra P. (1995). *Development theories and growth models : Modern economic dynamics; An exposition*. New Delhi, S. Chand & Co., 139p., Rs. 225.00.

17. Sharma, J R. (1994). *Principles and practice of plant breeding*. New Delhi, Tata McGraw Hill, xvi, 599p., Rs. 101.00.



## Teachers in Higher Education

I am glad you have prominently displayed "What American students expect from their teachers" on one page in *University News* of 17-4-1995. I found this in a students' magazine of the American University where I was working as a visiting professor and I included it as an annexure in my article On Assessment of Teachers and Teaching included in UGC publications *Role and Responsibilities of Teachers (1981)*. I hope this publication will provoke some group of Indian students to write on "What Indian Students expect from their teachers."

In fact I would very much like to see a number of articles by each group in higher education system viz. students, teachers, research scholars, professors, heads of departments, principals, vice chancellors, chancellors, education ministers, about what it expects from every other group in the system. I hope such articles will initiate a healthy much-needed debate on mutual accountability in our higher education system.

As a person interested in higher education, I have written about these expectations in my articles and books. However I am sure many would like to know the views of different groups about the role and responsibilities of other groups in the higher education system. It may be that the UGC may like to publish books on the role and responsibilities of each group as seen by itself and by other group.

J N Kapur,  
C-766, New Friends Colony,  
New Delhi-110065.

(Advt. No. 2 & 3/95/ICMR Hqrs. Office)

Applications are invited upto 30.6.1995 for the following posts in the Hqrs. Office of the Council, New Delhi. These posts under ICMR Research Cadre are transferable.

### ADVT 2/95

**RESEARCH OFFICER (MEDICAL)** (Reserved for SC) in the scale of pay of Rs. 2200-75-2800-EB-100-4000. **QUALIFICATION AND EXPERIENCE :** **Essential :** MBBS, **Desirable :** 3 years research and teaching experience in the area of Non-Communicable Diseases OR M.D. in General Medicine/Preventive and Social Medicine or Pathology. **Job Requirements :** The Incumbent will be required to assist in the co-ordination of the research activities in all areas of non-communicable diseases including Occupational and Environmental Health

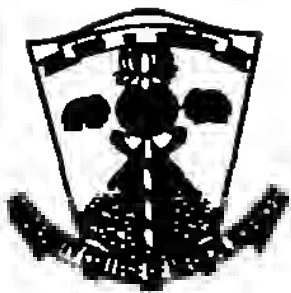
### ADVT 3/95

**RESEARCH OFFICER (HINDI PUBLICATIONS)** in the scale of pay of Rs. 2200-75-2800-EB-100-4000. **QUALIFICATION AND EXPERIENCE :** **Essential :** 1st Class M.Sc. in Biomedical Sciences/Life Sciences (in subjects like Zoology, Microbiology, Biochemistry, Pharmacology) (with sound knowledge of Hindi and English) **Desirable :** (i) 3 years experience in preparing science material for laymen in semi-technical language in English/Hindi; (ii) Ph.D. in Biomedical Science (subjects as listed above); (iii) Ability to interpret scientific concepts in English as well as in Hindi; (iv) Experience in technical writing/translating and editing of Science articles/reports in a reputed publishing organisation; (v) A degree or its equivalent in Hindi. **Job Requirements :** The incumbent will be required to (i) prepare in Hindi and English Scientific articles/features on selected topics meant for scientists as also the laymen; (ii) prepare Hindi versions of the Annual Report of Director General, ICMR, Bulletin and other technical documents/information, as and when required; (iii) participate in the preparation of display material for exhibitions meant for the scientific community and also the laymen; (iv) undertake copy-editing and proof-reading of ICMR offset publications in Hindi and English.

**Age :** 45 Years. SC/ST candidates allowed relaxation in accordance with Govt of India rules.

Pensionary benefits are admissible as per Govt rules in force. Private practice is not allowed. Non-practising allowance as per rules in force is admissible to medical graduates only. Application form can be obtained from the office of the **Director General, Indian Council of Medical Research, Ansari Nagar, Post Box. 4911, New Delhi-110029**. Application duly completed should be sent to the Director General, ICMR alongwith a crossed postal order for Rs. 8/- drawn in favour of **Director General, ICMR** payable in New Delhi. SC/ST candidates are exempted from payment of this amount. Applications without postal order and/or incomplete applications and applications received after the closing date will not be entertained. The name of the post applied for must be indicated on the top of the application form. Candidates called for personal discussion will be paid second class rail fare by the shortest route. No TA/DA is admissible for joining the post or on termination of appointment. Applications from the employees working under the Central/State Govt/Semi Govt. and Govt. controlled undertakings should be sent through their employer and should be received before the closing date alongwith the certificate of the employer that the applicant will be relieved within three months of his/her receipt of appointment orders. Advance copies will be considered subject to the condition that a 'No Objection Certificate' from the employer is produced at the time of personal discussion. Candidates called for personal discussion have the option to answer in Hindi also. The Council reserves the right to short-list the applicants to be called for personal discussion.

Any **CANVASSING** by or on behalf of the candidates or bringing political or other outside influence with regard to the selection/recruitment shall be considered as **DISQUALIFICATION**.



# UNIVERSITY COLLEGE OF MEDICAL SCIENCES

(UNIVERSITY OF DELHI)

GURU TEG BAHADUR HOSPITAL, DELHI-110 095

## ADVERTISEMENT NO. MC/ESTAB./2/11/95-II

Applications on the prescribed form are invited for the following Non-Teaching posts to reach latest by 17th July, 1995.

1. **Veterinary Officer** : (One post) : Rs. 2200-4000; E.Q. : B.V.Sc. with 5 years experience in care and handling of laboratory animals.  
Desirable : Experience in management of animal house of any recognised Institution.
2. **Physicist** : (One post) : Rs. 2200-4000; E.Q. : M.Sc. in Physics, 1st or 11nd Class (Preferably with Electronics, Nuclear Physics or X-Rays as special papers)  
Desirable : Ph.D. in Physics and one year training course of 'Radiological Physics' conducted at the Bhabha Atomic Research Centre (BARC) Trombay, Bombay or equivalent.
3. **Statistical Assistant** : (One post, reserved for SC) : Rs. 1400-2300; E.Q. : Master's degree in Mathematics or Statistics or Second Class in B.A./B.Sc., with Mathematics or Statistics as one of the subjects with 3-4 years experience of Statistical work.  
Desirable : Training in Computer Programming.
4. **Health Educator** : (One post, reserved for SC) : Rs. 1400-2300; E.Q. : M.A. in Social Sciences with Diploma in Health Education; two years experience in field work.
5. **Audio-Visual Assistant** : (One post) : Rs. 1400-2300; E.Q. : Minimum Higher Secondary with Science subjects. Diploma or Certificate Course in the use of Audio Visual equipment organised by NCERT or other recognised bodies.  
Desirable : Experience of teaching the use of these aids. Ability to attend to minor repair.
6. **Stenographer** : (Four posts) (out of which two posts are reserved for SC and one post is for ST) : Rs. 1200-2040; E.Q. : Matriculation or equivalent qualification with proficiency in Shorthand at speed of not less than 80 w.p.m. and proficiency in Typewriting at a speed of not less than 35 w.p.m.
7. **Jr. Asstt.-cum-Typist** : (Four posts) (out of which one post is reserved for SC and two posts are for ST) : Rs. 950-1500; E.Q. : Matriculation or equivalent qualifications with min 35 w p m. in English typewriting.
8. **Despatch Rider** : (One post) : Rs. 950-1400; E.Q. : Should have valid licence for driving Three-wheeler. Professional skill in driving, motor mechanics and general smartness with polite manners.  
Desirable : A pass in Middle School standard.
9. **Auxiliary Nurse Midwife** : (Two posts) (out of which one post is reserved for SC) : Rs. 950-1400; E.Q. : Certificate Auxiliary Nurse and Midwife from a recognised Institution. Registered as Auxiliary Nurse Midwife with a recognised Nursing Council.
10. **Lab. Attendant** : (Seven posts) (out of which two posts are reserved for SC, one post for ST and one post for OBC) : Rs. 950-1400; E.Q. : Sr. Secondary Exam. with Science subjects.  
Desirable : Experience of work in Laboratory of Medical College/Hospital.

All posts carry usual allowances at the rates prescribed by the University from time to time. The prescribed application form can be obtained from the **University College of Medical Sciences & G.T.B. Hospital, Shahdara, Delhi-110 095** personally or on written request alongwith a self-addressed envelope of size 28 cm x 13 cm, with postage stamps worth Rs. 3/- referring to Advt. No. MC/Estab./2/11/95/-II. The cost of the form is Rs. 5/- which can be sent, if required, by post, by Indian Postal Order drawn in favour of **The Principal, University College of Medical Sciences, Delhi-110 095.**

PRINCIPAL

# RESEARCH IN PROGRESS

A list of research scholars registered for doctoral degrees in Indian Universities

## PHYSICAL SCIENCES

### Mathematics

1. Saha, Jayanti. Extensions of valued function fields. Panjab. Dr Sudesh Khanduja, Department of Mathematics, Panjab University, Chandigarh.

### Physics

1. Desai, Rajendra Venkatesh. Microcomputer configuration for physical instrumentation. Shivaji. Dr P B Joshi, Department of Physics, Shivaji University, Kolhapur.

2. Gadakh, Sanjay Raghunath. Studies on preparation and characterisation of semi conducting  $\text{Bi}_2\text{S}_3$ ,  $\text{Sb}_2\text{S}_3$  and  $\text{As}_2\text{S}_3$  thin film compounds. Shivaji. Dr C H Bhosale, Department of Physics, Shivaji University, Kolhapur.

3. Ghatage, Amasaheb Krishna. Neutron diffraction studies on tetravalent substituted Mg Zn ferrite. Shivaji. Dr S A Patil, Department of Physics, Shivaji University, Kolhapur.

4. Joshi, Pankaj. A study of shape deformation at high spins in deformed nuclei. Panjab. Prof I M Govil, Department of Physics, Panjab University, Chandigarh and Dr R K Bhowmick Nuclear Science Centre, New Delhi.

5. Kokare, Shrikant Rajaram. Study of the effect of compensated off valency substitution in polycrystalline  $\text{BaTiO}_3$  ceramic. Shivaji. Dr P B Joshi, Department of Physics, Shivaji University, Kolhapur.

6. Lade, Sunil Jagannath. Preparation, characterization and photovoltaic applications of cadmium chalcogenide films. Shivaji. Dr C D Lokhande, Department of Physics, Shivaji University, Kolhapur.

7. Patil, Anil Narayan. Studies on physical properties of substituted nickel and manganese ferrites. Shivaji. Dr S A Patil, Department of Physics, Shivaji University, Kolhapur.

8. Patil, Raghunath Hindurao. Structural and optoelectronic properties of  $\text{Zn}_{1-x}\text{Cd}_x\text{S}:\text{Cu}:\text{Er}$  film phosphors. Shivaji. Dr C S Shalgonkar, Department of Physics, Shivaji University, Kolhapur.

9. Pawaskar, Padmaja Nivas. Studies on synthesis of Hg-Ba-Ca-CuO oxide superconducting films using spray pyrolysis technique. Shivaji. Dr S H Pawar, Department of Physics, Shivaji University, Kolhapur.

10. Salunkhe, Shubhangi Shankarrao. Preparation and characterization of  $\text{Pb}^{2+}\text{Hg}^{2+}$  and  $\text{Pb}^{2+}\text{Hg}_2\text{S}$  films. Shivaji. Dr C D Lokhande, Department of Physics, Shivaji University, Kolhapur.

11. Surve, Vandan Gulab. Thick and thin films microwave integrated circuits using some mixed ferrites. Shivaji. Dr (Mrs) Vijaya Puri, Department of Physics, Shivaji University, Kolhapur.

12. Ubale, Milind Jotiram. Studies on Hg-Ba-Ca-CuO superconducting thin films via an electrodeposition process. Shivaji. Dr S H Pawar, Department of Physics, Shivaji University, Kolhapur.

13. Wagh, Pratap Baburao. Studies on the preparation and physical properties of silica aerogels. Shivaji. Dr A V Rao, Department of Physics, Shivaji University, Kolhapur.

### Chemistry

1. Adav, Sunil Shankar. Alteration in drugs metabolizing enzymes due to environmental toxicants in chickens. Shivaji. Dr S P Govindwar, Department of Chemistry, Shivaji University, Kolhapur.

2. Bhalvankar, Ramchandra Bhagwan. Physicochemical and chemotherapeutical studies of transition metal complexes of nitrogen, oxygen and sulphur donor ligands. Shivaji. Dr Prakash More, Department of Chemistry, Shivaji University, Kolhapur.

3. Deepa, S. Extraction and liquid membrane transport studies in alkali and alkaline earth metal cations using non-cyclic synthetic ionophores. Vikram. Dr (Smt) Uma Sharma, School of Studies in Chemistry, Vikram University, Ujjain.

4. Jasamnt Kaur. Synthesis of organic compounds via unconventional methodologies. Panjab. Dr G L Kad and Dr J S Brar, Department of Chemistry, Panjab University, Chandigarh.

5. Kavita Manju. Rational designing of efficient chiral Lewis acid for enantioselective reactions. Panjab. Dr Sanjay Trehan, Department of Chemistry, Panjab University, Chandigarh.

6. Khamaru, Shipra. Studies in extraction and liquid membrane transport of alkali and alkaline earth metal cations facilitated by synthetic non-cyclic carboxylic ionophores. Vikram. Dr (Smt) Uma Sharma, Sr Lecturer, School of Studies in Chemistry, Vikram University, Ujjain.

7. Patil, Payagounda Balagounda. Solvent extraction and separation studies of toxic elements from weak acid media using liquid anion exchangers. Shivaji. Dr M B Chavan, Department of Chemistry, Shivaji University, Kolhapur.

8. Patil, Rajgounda Jangounda. Liquid-liquid extraction and separation of some selected elements with N-n-octylaniline as an extractant. Shivaji. Dr M B Chavan, Department of Chemistry, Shivaji University, Kolhapur.

9. Salokhe, Minal Dinkar. Study on microbial cytochrome P-450. Shivaji. Dr S P Govindwar, Department of Chemistry, Shivaji University, Kolhapur.

10. Shejawal, Rajendra Vishwanath. Kinetics and mechanism

of dihydroxy benzoic acids oxidation by chromium (VI). Shivaji. Dr G S Gokavi, Department of Chemistry, Shivaji University, Kolhapur.

11. Singh, Neelima. Chemical studies and testing of antifertility activity of some regionally available medicinal plants. Vikram. Dr B K Mehta, Reader, School of Studies in Chemistry, Vikram University, Ujjain.

12. Virkar, Dattatraya Dadu. Kinetics and mechanism of oxidations by pyridinium chlorochromate. Shivaji. Dr G S Gokavi, Department of Chemistry, Shivaji University, Kolhapur.

#### Earth Sciences

1. Agnihotri, Peeyush. Structural and metamorphic history of the area around Najan, District Kulu, Himachal Pradesh, India. Panjab. Prof R C Kanwar and Dr Naval Kishore, Department of Geology, Panjab University, Chandigarh.

### BIOLOGICAL SCIENCES

#### Biotechnology

1. Prashar, Kamana. Studies on the genetics—(molecular and cytogenetics) of colorectal and oesophageal cancers. Panjab. Prof R C Sobti, Department of Biotechnology, Panjab University, Chandigarh, Dr D Kaul, Chief, Molecular Biology Unit, Department of Experimental Medicine, Post Graduate Institute of Medical Education and Research, Chandigarh and Dr Deepak Bhasin, Department of Biotechnology, Panjab University, Chandigarh.

2. Pratap, Jitesh. Molecular studies on recombinant streptokinase and its altered forms. Panjab. Dr Kanak Lata Dikshit, Institute of Microbial Technology, Chandigarh.

3. Raminder Kaur. Geneals of cervical cancer. Panjab. Prof R C Sobti, Department of Biotechnology, Panjab University, Chandigarh, Dr D Kaul, Chief, Molecular Biology Unit, Department of Experimental Medicine and Prof Sarla Gopalan, Department of Obstetrics and Gynaecology, Post Graduate Institute of Medical Education and Research, Chandigarh.

#### Botany

1. Adurkar, Sharad Babasaheb. Studies on the fossil flora of Cauvery Basin. Shivaji. Dr B A Vaggyani, Department of Botany, Shivaji University, Kolhapur.

2. Ajith Kumar, P. *In vitro* culture and analysis of somaclonal variations in *Kasmpferia galanga* L. Kerala. Dr S Seeni, Tropical Botanic Garden and Research Institute, Palode.

3. Datar, Kalpana Rajabhai. Studies on the fossil plant remains of Wardha District (MS). Shivaji. Dr K S Patil, Department of Botany, Smt K W College, Sangli.

4. Gireesh, T. Induced mutations for yield and quality in *Taro* and *Cassava*. Kerala. Dr S G Nayar and Dr K Vasudevan Central Tuber Crops Research Institute, Thiruvananthapuram.

5. Godbole, Savita Krishnarao. Biosystematic studies in Indian *Scilla* Linn. Shivaji. Dr G B Dixit, Department of Botany,

Shivaji University, Kolhapur.

6. Harinder Kaur. On the regeneration potential of some economically important bamboos and orchids : A study *in vitro*. Panjab. Dr M L Sharma and Prof S P Vij, Department of Botany, Panjab University, Chandigarh.

7. Sahani, Ullasini. Role of plantation forestry in reclamation of degraded tropical soil. Sambalpur. Dr Niranjan Behera, Reader, School of Life Sciences, Sambalpur University, Jyoti Vihar, Burla.

8. Salvi, Anjali Pratap. Studies in physiology of some vegetables stored at chilling temperatures. Shivaji. Dr B A Karadge, Department of Botany, Shivaji University, Kolhapur.

#### Zoology

1. Abdar, Mohan Ramchandra. Studies on the protective and curative effects of 'Kamala' in CCl<sub>4</sub> induced hepatic injury in albino rats. Shivaji. Dr (Mrs) A A Kanase, Department of Zoology, Shivaji University, Kolhapur.

2. Ajitha, V.S. Molecular characterisation of insect gut peptides. Kerala. Dr D Muraleedharan, Prof, Department of Zoology, University of Kerala, Kariavattom.

3. Buwa, Savita Keshavdas. Hepatoprotective and curative effects of abhrak bhasma on liver, kidney and adipose tissue of male albino rats. Shivaji. Dr (Mrs) A A Kanase, Department of Zoology, Shivaji University, Kolhapur.

4. Deshpande, Vishwas Yashwant. Effect of synthetic pyrethroid on the fresh water fish, *Labeo rohita*. Shivaji. Dr D V Muley, Department of Zoology, Shivaji University, Kolhapur.

5. Kiran Jit Kaur. Studies on the evolutionary diversification of bruchid pests using conventional and molecular techniques (Bruchidae : Coleoptera; Insecta). Panjab. Dr H R Pajni and Dr R C Sobti, Department of Zoology, Panjab University, Chandigarh.

6. Kumbhar, Sanjay Nanaso. Cadmium induced toxicity to the estuarine clams from Ratnagiri Coast, Maharashtra. Shivaji. Dr D V Muley, Department of Zoology, Shivaji University, Kolhapur.

7. Margaj, Ganesh Sambha. Reproductive behaviours in some braconids on cotton pests. Shivaji. Dr T V Sathe, Department of Zoology, Shivaji University, Kolhapur.

8. Patil, Sakharan Balu. Studies on some systems of *Helotrickia serrata* F. (Coleoptera : Scarabaeidae). Shivaji. Dr G P Bhawane, Department of Zoology, Shivaji University, Kolhapur.

9. Sunny, Francis. A study on the effect of insecticides on metabolism and osmoregulation in a fresh water fish : Possible regulation by hormones. Kerala. Dr Oommen V Oommen, Prof, Department of Zoology, University of Kerala, Kariavattom.

#### Medical Sciences

1. Badade, Zunjarrao Ganpat. Study of polymerase chain reaction (PCR) in leprosy. Shivaji. Dr S K Ahaley, Government Medical College, Miraj.

# THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

## PHYSICAL SCIENCES

### Mathematics

1. Dinesh Kumar Chand. Almost periodic function in abstract spaces. Vikram. Dr Brijendra Singh.
2. Javkhedkar, Aruna. Estimation and test of hypotheses of variance components in two-way nested random model with unbalanced data. Vikram. Dr R C Jain.
3. Kamalesh, V. Some contributions to inference for time series and branching processes. Madras. Dr K Sureshchandra.
4. Kaurav, Prahlad Singh. A study of special function and transform analysis with applications. Ghasidas. Dr S P Singh, Department of Education, Guru Ghasidas Vishwavidyalaya, Bilaspur.
5. Sanyal, Barun Kumar. Representations of digraphs using intervals on circular arcs. NBU.
6. Shashi Bala. A study on characterisation of some classes of matrix transformation between some sequence spaces. AMU. Dr Mursaleen.
7. Sucharitha, J. A study of existence and improvement of solutions of operator equations. Osmania. Prof K Kuppuswamy Rao, Department of Mathematics, Andhra Pradesh Open University, Hyderabad.
8. Tamilarasi, A. Construction and representation of regular semigroups. Madras. Dr M Loganathan.
9. Tiwari, Madhu. A study of generalized hypergeometric functions. Devi Ahilya. Dr C L Parihar, Department of Mathematics, Holkar Science College, Indore and Dr C K Dave, Head, Department of Mathematics, Holkar Science College, Indore.

### Physics

1. Balasubramanian, Sathya. Studies on hydrogen in indium phosphide. IISc.
2. Caleb Chanthi Raj, D. Shell effects and nucleon separation energies at ground state and high spin states of nuclei. Madras. Dr M Rajasekaran.
3. Chaudhari, Laxman Mahadu. Study of gamma absorption properties of some solution. Marathwada. Dr M T Teli, Department of Physics, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.
4. Dixit, Sudhir Kumar. A study on the resonators for high gain pulsed lasers. Devi Ahilya. Dr Rajiv Bhatnagar, Scientific Officer, CAT, Indore.
5. Grace Christy Rani, R. Study of coupled spin systems by flip-angle dependent one and two-dimensional NMR experiments. IISc.
6. Hamh. Electrical characterization of semiconductor material and devices. Jamia. Dr M Husain, Department of Physics, Jamia Millia Islamia, New Delhi and Dr S K Agarwal, SSPL.
7. Ingle, Sharadchandra Govind. Defect dependent domain behaviour in  $\text{KNbO}_3$  single crystals. D Sc. Nagpur.
8. Jesu Rethinam, P. Growth and characterization of pure and doped strontium tartrate single crystals. Madras. Dr S Ramasamy.
9. Lakshmana Rao, V. Studies on resolution of two unequally bright object points by apodised annular optical systems in partially coherent illumination. Osmania. Dr S L Goud, Department of Physics, Osmania University, Hyderabad.
10. Menon, Gautam Iqbal. Topics in the statistical mechanics of extended objects. IISc.
11. Nimkar, Seva. Model calculation for electronic structure of transition metal compounds. IISc.
12. Padmini, M D. Fission, fusion properties and molecular configurations in certain excited light nuclei. Madras. Dr G Shanmugam.
13. Paul Ravindran, B. Design development of a low cost radiation field analyzer for data acquisition and software for generation of isodose charts for treatment planning with high energy photons and electrons. Madras. Dr C A Jayachandran.
14. Prakash, J S. New realizations of model spaces of  $\text{SU}(3)$  and formulae for the Clebsch Gordan coefficients of  $\text{SU}(3)$ . Madras. Prof N R Ranganathan.
15. Premanand, R. Phase space calculation for fused compound systems formed in heavy ion collisions. Madras. Dr N Rajasekaran.
16. Ravi, B G. Studies on  $\text{CaF}_2$ ,  $\text{CaF}$ ,  $\text{LiF}$  and  $\text{Ag}_2\text{HgI}_4 - \text{CdI}_2$  fast ionic conductors. Madras. Dr S Ramaswamy.
17. Sarma, Bhabani Kanta. A futurologic study on some aspects of science and technology scenario of Assam. Gauhati. Prof K M Pathak, Vice Chancellor, Central University, Tezpur.
18. Seetharaman, J. Structural, conformational and sequence analysis of nucleic acids and X-ray analysis of drug molecules. Madras. Dr R Srinivasan.
19. Selvakumar, Champion C. Crystal structure studies on the A-DNA decamers d (CCGGGCCCGG) and d (GCCCCATGGGC). IISc.
20. Singh, Yesh Pal. Accurate determination of temperature in the light of spectral shift due to source correlation. Jamia. Prof Z H Zaidi, Department of Physics, Jamia Millia Islamia, New Delhi.
21. Sutariya, Gordhanbhai Monabhai. Development of ferro-magnetic fluids. Bhavnagar. Prof R V Mehta, Department of



22. Vardhani, C P. Birefringence and strain optical effect in lithium tantalate open type optical waveguides. Osmania. Prof Ravindharan Ethiraj, Department of Physics, Osmania University, Hyderabad.

23. Vytheeswaran, A S. Symmetries in systems with second class constraints. Madras. Dr Ramesh Anishetty.

## Chemistry

1. Arivalagan, K. Phase transfer catalysis assisted polymerisation: Kinetics and mechanism. Madras. Dr T Balakrishnan.

2. Bag, Braja Gopal. Asymmetric synthesis of troger's base analogues and studies in molecular recognition. IISc.

3. Bhatnagar, Mamta. Chromatographic analysis of organic compounds using charge transfer complexation and fluorescence techniques. Devi Ahilya. Dr S L Garg, Department of Chemistry, Govt Girls Postgraduate College, Indore.

4. Bhuma, V. Selective organic transformations by montmorillonite supported transition metal catalysts and hydrotalcites. Osmania. Dr B M Choudary, Indian Institute of Chemical Technology, Hyderabad.

5. Bijoy, P. Synthetic investigations in terpenoids and steroids. IISc.

6. Brahmeshwari, G. Synthesis of some new type of heterocyclic systems from quinones. Kakatiya. Prof T V Padmanabha Rao, Department of Chemistry, Kakatiya University, Warangal.

7. Chandrayya, Hiremath Shivamurti. Kinetics and mechanism of some oxidation reactions. Karnatak. Dr J R Raju (Retd), Department of Chemistry, Karnatak University, Dharwad.

8. Gangakhedkar, Kiran Kumar. Synthesis of biologically active compounds. Osmania. Dr A V Rama Rao, Director, Indian Institute of Chemical Technology, Hyderabad.

9. Garg, Jyoti. Chemical studies of polymer coatings for steel. Devi Ahilya. Dr M L Gangwal, Department of Chemistry, PNB Gujarati Science College, Indore.

10. Gurunathan, K. Photocatalytic and photoelectrochemical reactions involving oxide semiconductors: Preparation, characterization and application of undoped and doped semiconductor photocatalysts. Madras. Prof P Muruthumathu.

11. Jamwal, Vijay Singh. Methods for the determination of some organic functions and their commercial applications. HP.

12. Jayamani, V. A study on the conformation of some piperidine derivatives. Madras. Dr T R Radhakrishnan.

13. Kamalash Babu, R P. Synthetic, spectroscopic and structural investigations on transition metal complexes of unsymmetrical and chiral diphosphazane ligands. IISc.

14. Kannan, A. Studies on the synthesis of molecules with exotic ring system. Madras. Dr P Rajkumar.

15. Kumbhar, Ashok Ganpati. Copper speciation in aqueous medium of all volatile treatment AVT reagents using electrochemical techniques. Madras. Dr P K Mathur.

16. Malla Reddy, K. Synthesis of some biologically active compounds. Osmania. Dr A V Rama Rao, Director, Indian Institute of Chemical Technology, Hyderabad.

17. Maria Amala Sekar, M. Combustion synthesis and properties of ferroelectrics, relaxor ferroelectrics and microwave resonator materials. IISc.

18. Nadkarni, K K. Synthetic studies on coumarins. Goa. Dr S K Paknikar.

19. Narendra Kumar, G. Equilibrium studies of biomimetic Cu (II) ternary complexes involving imidazole pyridyl derivatives and biomolecules. Osmania. Prof M Srinivas Mohan, Department of Chemistry, Osmania University, Hyderabad.

20. Pachha, Ranjit Ramchandran. Studies on polyester resins. Patel. Dr R D Patel.

21. Panda, Kailash Kumar. Arsenate substitution in the barium calcium mixed hydroxylapatites. Sambalpur. Dr P N Patel, Reader, Department of Chemistry, Government College, Rourkela.

22. Patel, Harshadkumar Ravjibhai. Studies on metal chelates of the ligands derived from the reaction between aldehydes, amines and 8-quinolinol. Patel. Dr M M Patel.

23. Praveen Kumar, N. Synthesis of thiazolo, pyridino and benzazepino-naphthalenes and benzimidazoquinazolines as potential antibacterial agents. Osmania. Prof C V Chalapathi Rao, Department of Chemistry, Osmania University, Hyderabad.

24. Rajendran, T M. Synthesis, spectral, electrochemical, magnetic and X-ray crystallographic studies of phenoxobridged binuclear copper (II) complexes. Madras. Dr M Kandaswamy.

25. Ramabadrar, S. Non-enzymic browning studies on milk and milk proteins. Madras. Dr A Srinivasan and Dr S Gopalan.

26. Ramaraj, B. Synthesis and physico chemical studies of interpenetrating polymer networks (IPNs). Madras. Dr (Mrs) Ganga Radhakrishnan.

27. Rao, Sheela. Physico-chemical properties of meso substituted octaalkyl porphyrins. IISc.

28. Rathna, A. Theoretical studies of fullerenes and fullerenes derivatives. IISc.

29. Santra, A K. Investigations of metallic clusters, metallic overlayers and superconducting cuprates by photoelectron spectroscopy. IISc.

30. Saroj Devi, M. New polymerization process: Kinetics and mechanism of polymerization of octene 1. Madras. Prof R Kothandaraman.

31. Sathya Shankar, P. Synthetic investigations in terpenoids: Total synthesis of (+) -allo-cedrol (Khusiol) and illudinalone. IISc.

32. Selvakumar, N. Synthetic investigations on terpenoids. IISc.

33. Shafi, Muhammed. Synthesis, spectroscopic and structural investigations on some hydroxo bridged polynuclear cobalt (III) complexes. IISc.

34. Shobha Rani, P. Mechanism of anodic oxidation of zirconium and titanium. Osmania. Prof K S Sastry, Department of Chemistry, Osmania University, Hyderabad.

35. Sita Devi, K. Characterization of minor seed oils by modern analytical techniques and their utilization for industrial purposes. Osmania. Dr Sajid Hussain, Indian Institute of Chemical Technology, Hyderabad.

36. Sivasamy, A. Defluoridation studies. Madras. Dr Meenakshi Maruthamuthu.

37. Sudhakar Rao, J. Synthesis and biological screening of some new 1, 8-naphthyridines. Kakatiya. Prof B Sreenivasulu, Department of Chemistry, Kakatiya University, Warangal.

38. Sutaria, Dipan Harendrabhai. Studies on polychelates. Patel, Dr M N Patel.

39. Syamala, A. Aspects of the chemistry of  $\mu$ -oxo bis  $\mu$ -carboxylato : diruthenium complexes. IISc.

40. Thangavel, R. Polymerization reactions: Reactions of oximes and diisocyanates. Madras. Dr H Kothandaraman.

41. Thirupataiah Ch. Studies on metal complexes - acid hydrazones of some aldehydes as ligands. Kakatiya. Dr S Srihari, Department of Chemistry, Kakatiya University, Warangal.

42. Veerabrahmam, P. Physical studies in vinyl polymers. Krishnadevaraya. Dr G Venkata Naidu, Department of Polymer Science, Sri Krishnadevaraya University College, Anantapur.

43. Veeraiiah, T. Kinetic and mechanistic aspects of oxidation of some organic compounds by acid bromate. Osmania. Dr S Sondu, Department of Technology, Osmania University, Hyderabad.

44. Venkata Ramana Sarma, G. Studies on metallic soaps as driers. Osmania. Dr Sajid Hussain, Indian Institute of Chemical Technology, Hyderabad.

#### Earth Sciences

1. Abu-Hammatteh, Ziad Salem Hussain. Geochemistry and tectonic significance of early proterozoic mafic and ultramafic rocks of Jharol Belt of Aravalliorogen, South Eastern Rajasthan, India. AMU. Dr M Raza.

2. Deka, Hemangi. Petrology of the precambrian rocks of Rani Pamohi area, Kamrup Dist, Assam. Gauhati. Prof Md Maswood, Department of Geological Science, Gauhati University, Guwahati.

3. Jeyagopal, A V. Carbonate-hosted uranium mineralisation in Southwestern part of the midproterozoic Cuddapah Basin, Andhra Pradesh, India: Geology and exploration. Bangalore. Dr R Dhana Raju, Atomic Minerals Division, Department of Atomic Energy, Government of India, Bangalore.

4. Kamesh Raju, K A. Marine geophysical studies over a part of the central Indian basin, Indian ocean. Goa. Dr R R Nair.

5. Nagender Nath. Rare earth element geochemistry of the sediments ferromanganese nodules and crusts from the Indian ocean. Goa. Dr R R Nair.

6. Nair, Maheswari. Study of arsenic and related parameters along the central west coast of India. Goa. Dr Robin Sengupta.

7. Pasin, Kapil Narendrakumar. Geochemical and structural controls of fluorite mineralisation around Doggarson area in Chandrapur District, Maharashtra. Nagpur. Dr A N Deshmukh, Department of Geology, Nagpur University, Nagpur.

8. Rama Krishna, D V. Petrological and geochemical studies on the Gabbros of Kallampalle, Prakasam Dist, A P. Osmania. Dr J Ratnakar, Department of Geology, Osmania University, Hyderabad.

9. Ramaswamy, V. Lithogenic fluxes to the Arabian sea and Bay of Bengal. Goa. Dr R R Nair.

#### Engineering

1. Abbass, Hakim A. Analytical and experimental studies on mixture formation in the induction system of SI engines. IISc.

2. Balasubramanian, R. Studies on second order nonlinear effects in optical guided wave structures. IISc.

3. Bhattacharya, D K. Characterization of microstructures in steels by magnetic and ultrasonic techniques. IISc.

4. Chakraborty, Prabal K. Free convection in cylindrical enclosures with heat generating rod bundles. IISc.

5. Dattasharma, Abhi. Structure and computation of a class piecewise linear generalised Voronoi diagrams with application to translational motor planning. IISc.

6. Gopal, A. Studies on instrumentation development for the measurement of elastic constants of paper and paper products having application in production and quality control. Madras. Dr P E Senkaranarayanan and Dr R Balakrishnan.

7. Gopalakrishna, V. Composite performance-reliability analysis of flexible manufacturing systems. IISc.

8. Govindarajan, Rama. Stability of spatially developing boundary layers in pressure gradients. IISc.

9. Jayachandra Shenoy, U. High performance hardware schemes for digital protection of power systems. IISc.

10. Keshava Murthy, K. Theory and design of proportional weirs : Theoretical and experimental study. D.Sc. IISc.

11. Lakarampili, Z V. Digital controllers for high power and high performance induction motor drives. IISc.

12. Nagarajan, N. Autonomous orbit estimation for near earth satellites using horizon scanners. IISc.

13. Namboodiripad, Damodaran. Incipient motion of over-

riding apheres and seepage effects on sand bed channels. IISc.

14. Narasimha Rao, T V L. Aqueous corrosion and a fracture mechanics study of stress corrosion cracking in magnesium alloys (Mg-Li-Al, Mg-Li-Al-X and Mg-Zn-Mn). IISc.

15. Narasimhan, M G. Controversy as an explanatory category in scientific metatheory: An argument and an illustration. IISc.

16. Niranjana Reddy, P V. General analysis, parameter estimation and valve operational policy in water distribution networks. IISc.

17. Prabhakara Rao, B. Performance analysis of multi image subspace algorithm for source localization in shallow water. IISc.

18. Raghurama Rao, S V. New upwind methods based on kinetic theory for inviscid compressible flows. IISc.

19. Raju, A R. Investigations of gas sensors based on catalytic oxides and of oriented thin films of oxide materials obtained by nebulized spray pyrolysis. IISc.

20. Ravikiran, A. Sliding wear of structural ceramics ( $Al_2O_3$ , (B7%),  $Al_2O_3$ , (99.5%), TZP, ZTA, and  $Si_3N_4$ ) against steel: Observations on ceramic-steel interactions. IISc.

21. Rudresha Prasad, K V. Investigations into the structural, dielectric and ferroelectric properties of ceramics and single crystals of parent and substituted bismuth vanadate. IISc.

22. Sadasivan, P K. Signal processing algorithms for minimization of artefacts in electroencephalogram. IISc.

23. Sancheti, Nirmal Kumar. Efficient algorithms for linearly constrained convex programming and some proximity problems. IISc.

24. Santharam, G. Distributed learning with connectionist

models for optimization and control. IISc.

25. Seshadri, H K. Studies on punching shear strength of corner column connections in RC and FRC flat slabs. IISc.

26. Shiva Kumar. Propagation and interaction studies on optical waves in a cubically non-linear medium. IISc.

27. Sivarama Krishna Prasad, Veerapaneni. Studies on ionic mass transfer with impinging submerged jets in closed cylindrical cells. Andhra.

28. Sonak, Vilas Vasantao. Optimal design of looped water distribution systems. Nagpur. Dr P R Bhawe, Prof (Retd), Department of Civil Engineering, Visweswaraiya Regional College of Engineering, Nagpur.

29. Srinivasan, B. Neural networks in high performance control - An adjoint approach. IISc.

30. Sundaram, S. Distributed logic simulation: Performance studies of event-driven and time-first evaluation algorithms. IISc.

31. Venugopal, S. Optimization of workability and control of microstructure in deformation processing of austenitic stainless steels: Development and application of processing maps for stainless steels type AISI  $304$  and 316L. Madras. Dr S L Mannan.

32. Vijaya Kumar, S. Studies on the application of liquid membranes for the removal of dissolved metals from effluents. IISc.

#### Technology

1. Nagabhushan, E. Hot corrosion studies on nickel and iron based super alloys for turbine and boiler materials. Osmania. Dr S G Samdani, College of Technology, Osmania University, Hyderabad.

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## EDUCATION NEWS INDEX

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A list of select articles and editorials on education from newspapers received in the AIU Library during May 1995

### EDUCATIONAL PHILOSOPHY

Sailendra, K. Veda school. *Deccan Chronicle* 28.5.95.

### EDUCATIONAL PSYCHOLOGY

Anita Rao, M. Stress reduction in the classroom. *The Hindu* 16.5.95.

Kannappan, D L. Competency based training. *The Hindu* 16.5.95.

Kohn, Alfie. Succeeding without vying. *The Pioneer* 22.5.95.

Surya, Vasantha. Learning is fun, for some. *The Hindu* 14.5.95.

### EDUCATIONAL SOCIOLOGY

Atma Ram. Development of the rural poor. *The Hindu* 30.5.95.

Iyer, Sharda. School society and family. *The Hindu* 23.5.95.

Ordovensky, Pat. Education is the key to a better future *The Economic Times* 27.5.95.

Rahat Abrar. Fillip to education. *The Pioneer* 26.5.95.

### EDUCATIONAL POLICY & PLANNING

GOAL OF education (Editorial). *Indian Express* 22.5.95.

Gupta, Monobina. Exams to be scrapped till class VIII : Emphasis on stress-free learning. *The Telegraph* 15.5.95.

Khullar, K K. Values, with a touch of class. *The Hindustan Times* 9.5.95.

Krishnamoorthy, B. 2010 : Education for all. *Patriot* 26.5.95.

MID-DAY meal scheme (Editorial). *The Assam Tribune* 20.5.95.

Sharma, Tarsem Lal. End this charade of educational survey. **The Tribune** 15.5.95.

#### EDUCATIONAL ADMINISTRATION

Anjanappa, K. Profitable partnerships. **Deccan Chronicle** 15.5.95.

Deshmukh, Snehalata. Inheriting the hot seat. **The Times of India** 7.5.95.

Marins, Anupam. Graduation paranoia. **The Statesman** 26.5.95.

Mehmood-ur Rahman. 'I would not have accepted the post if there was no challenge'. **The Pioneer** 9.5.95.

Mehta, V R. DU should seek help of industry. **The Times of India** 30.5.95.

\_\_\_\_\_. 'An ideal Vice-Chancellor should ensure autonomy'. **The Pioneer** 23.5.95.

Mitra Chenoy, Kamal. Education: Promotion not by merit alone. **The Pioneer** 9.5.95.

Sharada Prasad, H Y. The highest in higher education. **National Herald** 21.5.95.

Subramanian, V K. Role of HRD in total quality management. **The Hindu** 17.5.95.

Uplankar, Ambarao T. Should NET be scrapped? **Deccan Herald** 28.5.95.

Varadan, M S S. Auditing for human resources development. **The Hindu** 6.5.95.

#### EDUCATION & POLITICS

Ambruse, Pinto S J. Mahachaitra and academic freedom. **Deccan Herald** 28.5.95.

SESHAN & SHANTINIKETAN (Editorial). **Indian Express** 4.5.95.

#### CURRICULUM

Ekbote, Anil. Drawing going down the drain. **Deccan Chronicle** 29.5.95.

Jiv Jyot Kaur. Satisfying a need. **The Hindustan Times** 28.5.95.

Mukherjee, Mita. Modern authors introduced in English literature : Change in syllabi long overdue. **The Telegraph** 29.5.95.

Reghu, V. Teachers and family life learning. **The Hindu** 16.5.95.

#### LANGUAGE & LANGUAGE POLICY

Sharma, Ashok. The row over Punjabi at PU : Meeting amid protests today. **The Tribune** 29.5.95.

Vasudev, Shefalee. English as she is spoke. **The Hindustan Times** 30.5.95.

#### SCIENCE EDUCATION

Gupta, Y P. All's not well with science in India. **Indian Express** 9.5.95.

#### VOCATIONAL EDUCATION

Agrawal, Damodar. Problems persist. **The Pioneer** 28.5.95.

Ekbote, Anil. Drawing goes awry. **Deccan Chronicle** 22.5.95.

Gupta, Nilanjana. Sinking the scholar's ship. **The Telegraph** 15.5.95.

Jose, Raphael. In search of trend-setters. **The Hindustan Times** 9.5.95.

Korba, Arvind I. History and horizon of management education. **Deccan Chronicle** 15.5.95.

Nathan, Raghu. Taking recourse to the law. **The Hindustan Times** 23.5.95.

REVAMPING ENGINEERING education ( Editorial ). **The Hindu** 25.5.95.

Shadaksharappa, K S. Medical reforms. **Deccan Herald** 21.5.95.

'Z' - LEVEL. engineering after matric (Editorial). **The Tribune** 29.5.95.

#### TEACHERS & TEACHING

Amrik Singh. Merit vs mass promotion. **The Hindustan Times** 27.5.95.

Atma Ram. Tutored to stay on course. **The Hindustan Times** 23.5.95.

Bidwai, Praful. Teachers, our new sudras : Pay structure demands reform. **The Times of India** 18.5.95.

Gopalan, R. Primary school teaching: A review. **The Hindu** 23.5.95.

Mishra, Sidhorth. No tests for us please, we're teachers. **The Pioneer** 23.5.95.

Mohammed, U. Choices for English language teachers. **The Hindu** 23.5.95.

Quraishi, Humra. The great tuition bazaar. **The Pioneer** 14.5.95.

SHAPING YOUNG minds (Editorial). **The Times of India** 10.5.95.

Subramanyan, K. Principal's role in quality promotion. **The Hindu** 30.5.95.

Surya, Vasantha. If it's fun, it can't be teaching. **The Hindu** 22.5.95.

TEACHER'S AID (Editorial). **The Statesman** 21.5.95.

TEACHERS' DUES (Editorial). **Deccan Herald** 13.5.95.

Verma, Yoginder. The hand that holds the staff. **The Hindustan Times** 16.5.95.

#### EDUCATIONAL TECHNOLOGY

Amritkar, Chandragupta. Stepping into a paperless world. **The Hindustan Times** 10.5.95.

Bhattacharyya, Anirudh. Child-friendly computers. **The Pioneer** 9.5.95.

DEDICATED TV channel for education (Editorial). **The Hindu** 11.5.95.

Jain, Manisha. Computer as teachers. **Deccan Herald** 14.5.95.

Lakshminarayan, T V. Of computer gyms and mazes. *The Tribune* 22.5.95.

Mudur, G S. A break in the web. *The Telegraph* 15.5.95.

Natarajan, Ganesh. Advent of tele-education. *The Times of India* 25.5.95.

TUNING TO teach (Editorial). *The Times of India* 11.5.95.

Vasudeva, P K. E-Mail : Communication revolution. *The Tribune* 4.5.95.

#### EDUCATIONAL EVALUATION

ASSESSING COLLEGES (Editorial). *Deccan Herald* 5.5.95.

Atma Ram. Will examination reforms work? *The Hindu* 23.5.95.

Clare, John. Universities fail to make the grade. *The Pioneer* 9.5.95.

Elkote, Anil. Women against copying. *Deccan Chronicle* 15.5.95.

Singh, J P. A board cries for room. *The Hindustan Times* 30.5.95.

Upadhyaya, Ramesh. Turning exams into a farce. *The Hindu* 15.5.95.

#### ECONOMICS OF EDUCATION

Chopra, Ashok. Privatising education : State's role will remain. *Indian Express* 27.5.95.

Gill, Raj. Darkening horizon for labour employment. *The Assam Tribune* 13.5.95.

Iyer, Parameswaran. Funds alone won't do the trick. *The Economic Times* 15.5.95.

Kantak, V Y. Perestroika in higher education. *Deccan Chronicle* 13.5.95.

Kingdon, Geeta. Basic issues in basic education. *The Economic Times* 15.5.95.

Rao, T S. Punishing schools. *Deccan Herald* 21.5.95.

SELF-FINANCED colleges (Editorial). *The Hindustan Times* 18.5.95.

Tinaikar, S S. Wasteful basic education : Over 80% of BMC schools expenditure is on the staff. *Free Press Journal* 22.5.95.

#### LIBRARIES & BOOKS

BOOK VALUE (Editorial). *The Economic Times* 21.5.95.

CHEAPER EDUCATION material (Editorial). *The Hindu* 20.5.95.

Machwe, A. Paper trouble. *The Hindustan Times* 28.5.95.

Raghavan, Murali. Need for vernacular encyclopaedia. *Deccan Chronicle* 8.5.95.

#### STUDENTS AND STUDENT ACTIVITIES

Akki, Dinesh. AIESEC : Students' own global village. *Deccan Chronicle* 22.5.95.

#### PHYSICAL EDUCATION & SPORTS

ACCENT ON sports (Editorial). *The Assam Tribune* 12.5.95.

#### SPECIAL EDUCATION

Nathan, Raghu. Enabling disabled children. *The Pioneer* 23.5.95.

Srinivasan, Sandhya. No one's asking for charity. *The Times of India* 28.5.95.

#### ADULT EDUCATION

Khullar, K K. For adults only. *The Hindustan Times* 16.5.95.

Majumdar, Tapas. Schooling the alternative. *The Telegraph* 29.5.95.

Sivadasan Pillai, K. For a better tomorrow. *The Hindu* 30.5.95.

#### ELEMENTARY & SECONDARY EDUCATION

Bahl, Tara. Teaching no kidstuff. *The Tribune* 20.5.95.

Emmanuel, Amala. A child's world of maps. *The Hindu* 14.5.95.

Nair, Uma. Studying through summer. *The Hindustan Times* 28.5.95.

Naresh Kumar, K. Light shines in Tamil Nadu. *The Pioneer* 23.5.95.

Rajagopalan, K V. Efforts to combine quality with equity. *The Hindu* 16.5.95.

Rajagopalan, T. Schools away from school. *The Hindu* 28.5.95.

REDISCOVERING HOMEWORK for students (Editorial) *Indian Express* 16.5.95.

#### COMPARATIVE EDUCATION & AREA STUDIES

Kaltefleiter, Werner. Mistakes in higher education : German perspective. *National Herald* 25.5.95.

Satyanarayana, S V. Virus in AP varsities. *Deccan Chronicle* 14.5.95.

Vilaniyam, J V. Higher learning : A case study. *The Hindu* 30.5.95.

#### INSTITUTIONAL PROFILE

Bandopadhyay, Ratri and Sen, Sanjit. Narrow domestic walls : Rabindra Bharati University. *Free Press Journal* 21.5.95.

Sharma, Ashok. Under shadow of fragmentation : School of Punjabi Studies, Panjab University. *The Tribune* 8.5.95.

Vedantam, Vatsala. An open way of learning : Open University, UK. *Deccan Herald* 14.5.95.

#### BIOGRAPHICAL PROFILE

FROM BLAKE to Buddha : Dr Shaman Joulley (Editorial). *The Tribune* 22.5.95.

Mishra, Priya. Dr Armaity Desai : 'I have more dishes than my hands can hold'. *The Pioneer* 28.5.95.

Santhanam, Kausalya. Gave new meaning to home science. Dr Rajammal P Devadas. *The Hindu* 5.5.95.

Shukla, Shruti. Scholar extraordinary : Pandit Ramavtar Sharma. *The Pioneer* 14.5.95.



# AWADESH PRATAP SINGH UNIVERSITY, REWA (M.P.)

## ANNOUNCEMENT FOR ADMISSION 1995-96

Applications are invited for admission in the following courses offered by the University Teaching Departments :-

- (1) **M.Phil** in Ancient History, Culture and Archaeology, Business Economics, Chemistry, Environmental Biology, English, Hindi, Mathematics, Physics, Psychology, and Policy Research.  
**For Policy Research** candidates holding Master's degree in Economics/Business Economics/Geography/Political Science/Public Administration/Psychology/Sociology/ Anthropology are eligible.  
**Eligibility** Master's degree in the subject with at least 55% marks in aggregate.
- (2) **M.Sc.** in Environmental Biology, Chemistry, (Organic, Inorganic & Physical) Mathematics and Physics.  
**Eligibility** B.Sc. degree in the relevant subject under 10+2+3 pattern of Examination with at least 45% marks in theory.
- (3) **M.A.** in Ancient Indian History, Culture & Archaeology, Business Economics, English, Hindi, Psychology and Russian Language.  
**Eligibility** Bachelor degree under 10+2+3 pattern of Education with at least 45% marks in theory. Preference will be given to those candidates who have studied the subject at degree level.
- (4) **Master of Physical Education (M.P.Ed.)** : Two years P.G. Course. **Eligibility** B.P.Ed. degree from any recognised University or College of India with at least 50% marks.
- (5) **Bachelor of Physical Education (B.P.Ed.)** :  
**Eligibility** Bachelor's degree under 10+2+3 pattern of Education with at least 45% marks in theory.
- (6) **Part Time Certificate, Diploma and Advance Diploma Courses in Russian Language.**  
**Eligibility** Bachelor's degree.
- (7) **Yoga Courses in Centre for Yoga and Consciousness**  
(In Collaboration with Kaivalyadhama, Lonavla, Pune)  
(i) Certificate course in Yoga (CCY) Three Months, Part time.  
**Eligibility** Bachelor Degree.  
(ii) Diploma in Yoga Education (DYEd) One Year, Full time.  
**Eligibility** Bachelor Degree.  
(iii) Yoga Training Classes. Morning/Evening Open to all. (Contact :- Professor in-charge, Yoga Kendra)

### Note :-

(I) Those candidates who have appeared in the qualifying examination but their result is still awaited are also eligible to apply. (II) The University will hold an Entrance Test and Viva-Voce for admission in all P.G. Classes on 17th July, 1995 at 11.00 a.m. and for M.Phil. courses on 31st July, 1995 in the concerned Department. (III) The Entrance Examination is mandatory.

**Reservation of Seats :-** As per M.P. Govt. rules seats are reserved for SCs/STs/OBCs and physically handicapped candidates who have passed the qualifying examination are eligible to apply for admission irrespective of their percentage of marks.

**How to apply :-** Application form together with detailed instructions including eligibility conditions can be had either personally on all working days from the Heads of the concerned Department or through post by a Demand Draft in favour of the Registrar, A.P.S. University, Rewa along with a self addressed un-stamped envelope of 28x20 cms. size. The rates of Application Form for different Courses are as follows-

	On Cash payment	Through post by Demand Draft
1. For all the courses (excluding Physical Education & Yoga)	Rs. 80/-	Rs. 100/-
2. For Physical Education courses	Rs. 200/-	Rs. 220/-
3. For Yoga courses	Rs. 65/-	Rs. 85/-

**Last Date of receiving completed forms** for all courses excluding M.Phil. is **15th July, 1995** and for M.Phil. is **29th July 1995.**

**R.S. Pandey**  
**REGISTRAR**



# ADMISSION NOTICE

## INDIRA GANDHI NATIONAL OPEN UNIVERSITY

invites Applications to the following programmes  
for January 1996 session:

Sl. No.	Name of the programme	Code	Eligibility	Min. age as on 1.1.96
1.	Master of Arts in Distance Education	MADE	Diploma in Distance Education from IGNOU	No bar
2.	Master of Library & Information Science	MLISc	BLISc Degree from any recognised University or any other qualification considered equivalent to BLISc such as PG Diploma in Library Science from recognised University	No bar
3.	Post-Graduate Diploma in Journalism & Mass Communication	PGJMC	Graduate with 2 years experience in a media/communication organisation.	No bar
4.	Post Graduate Diploma in Distance Education	PGDDE	Bachelor's degree in any subject or a professional degree	No bar
5.	Post Graduate Diploma in Higher Education	PGDHE	Teachers in Institutions of Higher Learning or Post-Graduate degree holders in any subject with 50% marks or (Professional degree holders with 50% marks)	No bar
6.	Post-Graduate Diploma in Computer Applications	PGDCA	Graduates of three years duration with or without mathematics as one of the subjects in 10+2 examination or professional courses such as AMIE or Grad - IETE or any other qualification considered equivalent.	No bar
7.	Advanced Diploma in Construction Management	ADCM	3 years Diploma in Civil Engineering	No bar
8.	Advanced Diploma in Water Resource Engineering	ADWRE	3 years Diploma in Civil Engineering/Agricultural Engineering	No bar
9.	Bachelor of Arts	B.A.	10+2 or its equivalent qualification	No bar
10.	Bachelor of Commerce	B.Com	10+2 or its equivalent qualification	No bar
11.	Bachelor of Science	B.Sc.	10+2 with Science subjects or its equivalent qualification	No bar
12.	Bachelor's Preparatory Programme	BPP	No Formal Qualification	20 years
13.	Bachelor of Science in Nursing	B.Sc (Nursing)	10+2 with 3 years diploma in General Nursing and Midwifery or any other nursing course of 6-9 months duration in lieu of Midwifery with 2 years experience in the profession or 10th class with 3 years Diploma in General Nursing & Midwifery or any other nursing course or 6-9 months duration in midwifery with 5 years experience in profession	No bar
14.	Bachelor of Library & Information Science	BLISc	Bachelor's degree with 2 years experience in a recognised Library	No bar
15.	Bachelor in Computer Applications	BCA	10+2 or equivalent with Maths as a distinct subject	No bar
16.	Diploma in Computers in Office Management	DCO	Bachelor's degree or 10+2 or equivalent with 3 years working experience	No bar
17.	Diploma in Creative Writing in English	DCE	No formal qualification	21 years
18.	Diploma in Creative Writing in Hindi	DCH	No formal qualification	21 years
19.	Diploma in Rural Development	DRD	Bachelor's degree	No bar
20.	Diploma in Nutrition & Health Education	DNHE	10+2 or its equivalent qualification	No bar
21.	Diploma in Early Childhood Care and Education	DECE	10+2 or its equivalent qualification	No bar
22.	Certificate in Computing	CIC	10+2 or its equivalent	No bar
23.	Certificate in Guidance	CIG	Teachers of recognised institutions or pass in Matriculation/SSC	21 years
24.	Certificate in Food & Nutrition	CFN	No formal qualification	18 years
25.	Nutrition for the Community (Non Credit Course)	ANC	10+2 or its equivalent qualification	18 years
26.	Organising Child Care Services (Non Credit Course)	ACC	10+2 or its equivalent qualification	18 years

## GENERAL INFORMATION

A candidate is allowed to take admission in only One programme at a time.

### Medium of instruction for:-

- Programme at Sl. Nos. 1, 2, 3, 4, 5, 6, 7, 6, 13, 14, 15, 16, 17, 20, 21, 22, is in English
- Programme at Sl. No. 9, 10, 11, 12, 19, 23, 25, 26, is in Hindi & English.
- Programme at Sl. No. 24 is in Assamese, Gujarati, Hindi, Kannada, Malayalam, Marathi, Punjabi, Tamil & English.

Candidates applying for Programme at Sl. Nos. 17 & 18 should ask for **Self-Appraisal Forms** required to be submitted along with the filled-in Application form.

Candidates seeking admission to Computer Programmes (Sl. No. 6, 15, 16, 22) should ask for separate Brochures along with application form. For other programmes they may specify whether they need the prospectus in English or Hindi.

For Application form and prospectus, write to the Regional Directors (addresses given below) or Registrar (Admissions) IGNOU, Maidan Garhi, New Delhi - 110 068, against payment of amount indicated below either in cash or by way of IPO or Demand Draft drawn in favour of IGNOU and payable at the city of the Regional Centre concerned or New Delhi as the case may be. Candidates who wish to obtain Application forms by post have to add Rs. 10/- more towards postage etc. Application forms are also available at all the Study Centres of the University throughout the country. The Regional Directors will publish the addresses of their respective Study Centres in Regional Newspapers.

**Note :** IGNOU has not appointed/engaged any outside agency for sale of Application forms etc. Anyone buying from outside other than IGNOU Reg. Centres/Study Centres shall do it at his/her own risk.

### Fee :

- |  |             |
|--|-------------|
| 1 Brochure along with Application form for Computer programmes (Sl. No. 6, 15, 16, 22) | = Rs. 50.00 |
| 2 Prospectus in Hindi or English   | = Rs. 20.00 |
| 3 Application form for all the programmes other than Computer programmes               | = Rs. 30.00 |

- 4 "For more details, please view the IGNOU telecasts on Mondays, Wednesdays and Fridays at 6.30 a.m. on DD-1."

### ADDRESSES OF REGIONAL DIRECTORS, IGNOU

#### REGIONAL CENTRES:

- CESS Building, Nizamla Observatory Compound, Begumpet, Hyderabad-500 016.
- 170-A, Patliputra Colony, Patna - 600 013
- Vishwa Yuvak Kendra, Teen Murti Marg, Chanakyapuri, New Delhi - 110 021
- 268-C, Pitru Ashish, Near Avani Flats, Ishwar Bhawan Road, Navrangpura, Ahmedabad - 380 009
- Govt. College Campus, Railway Road, (OPP Liberty), Karnal - 132 001
- Willy's Park, Chaura Maidan, Shimla - 171 004.
- Directorate of Collegiate Education Premises, Sheshadri Road, Bangalore - 560 001.
- Mamangalam Palamvattom (PO), Cochin- 682 625
- E-7/62, Arera Colony, Near Bus Stop No. 11, Bhopal - 462 016
- Symbiosis International Cultural Centres, Senapati Bapat Road, Pune - 411 004
- Sunny Lodge, Nongthymmai, Nongshikong, Shillong - 793 014
- Plot No. 222/1, Shastri Nagar, Unit-IV, Bhubaneswar - 751 001.
- C-113, Shivaji Marg, Tilak Nagar, Jaipur - 302 004
- "Arulagam" No. 133, Chamlers Road, Nandanam, Madras - 600 035.
- B-1/33, Sector-H, Aliganj, Lucknow - 226 020.
- Bikash Bhawan, 4th Floor, North Block, Bidan Nagar, Calcutta - 700 091

**Last Dates of Issue of Application Forms by Post and Receipt of completed Application Forms :**

PROGRAMMES	ISSUE	RECEIPT
For Sl. Nos. 6, 7, 8, 12, 15, 16, 17, 18 and 22.	23.06.1995	10.07.1995
For Sl. Nos. 2 and 13,	30.06.1995	25.07.1995
For Sl. Nos. 1, 3, 4, 5, 9, 10, 11, 14, 19, 20, 21, 23, 24, 25 and 26	10.08.1995	25.08.1995

Envelope containing the Application form should be superscribed with the name of the programme.

REGISTRAR (ADMISSIONS)

## GURUKULA KANGRI VISHWAVIDYALAYA

HARDWAR-249 404

### ADMISSION NOTICE : SESSION 1995-96

Applications on prescribed form are invited for admission to the following courses :

- M.C.A.** Master of Computer Application (3 years).  
For Male candidates at Gurukula Kangri, Hardwar  
For Female candidates at Kanya Gurukula Mahavidyalaya, 47, Sevak Ashram Road, Dehradun.  
Eligibility : B.A./B.Sc./B.Com. (10+2+3), B.E./B.Tech. with 50% marks with Maths/Statistics as full subjects. Candidates appearing in final year of qualifying exam. may also apply.
- P.G. Diploma.** Personnel Management and Industrial Relations (2 year) for boys candidates only.  
Eligibility : At least second division Graduate (10+2+3) of any discipline.  
Seats—25 Sponsored Seats — 5 for inservice personnel  
Selection Criteria — For both courses : Merit determined by Entrance Examination.  
Application Form and other details for Entrance Examination may be obtained on cash payment of Rs. 150/- or by sending Bank Draft of Rs. 170/- (for each course) payable to Registrar.  
Application Form submission fee Rs. 300/-  
Reservation for SC/ST candidates as per rules.  
Last date of submission of application form for Entrance Exam.  
**JUNE 30, 1995**

**Dr. Jaidev Vedalankar**  
**REGISTRAR**

# GURUKULA KANGRI VISHWAVIDYALAYA

HARDWAR-249 404

## ADMISSION NOTICE : SESSION 1995-96

Applications on prescribed form are invited for admission to the following courses :

1. Alankar-Vedalankar/Vidyalankar (B.A.) T.D.C.
2. Alankar Samanya - B.A. (T.D.C. General Course).
3. B.Sc. (Maths, Bio, Computer, Industrial Microbiology, Psy, Philosophy groups).
4. M.Sc. (Maths, Microbiology, Chemistry, Physics & Psychology).
5. M.A. (Ved, Sanskrit, Philosophy, Hindi, English, Psychology, Yoga and Ancient Indian History, Culture & Archaeology, Maths).
6. Ph.D. (Ved, Philosophy, Hindi, Sanskrit, English, Psychology, Maths, Ancient Indian History, Culture & Archaeology, Botany, Zoology, Microbiology, Physics, Chemistry).
7. Diploma in Yoga (One year).
8. P.G. Diploma in Hindi Journalism (One year).
9. Proficiency in English (One year).
10. Diploma in Yojna Vidhan (Karamkand) One year.
11. Sanskrit "Pravesh" and Sanskrit "Praveen" one year Dip. Courses.

### Kanya Mahavidyalaya, Dehradun (Constituent College and Second Campus)

Female (Hostlers as well as day scholars) send their application direct to the Principal, Kanya Mahavidyalaya, 47, Sevak Ashram Road, Dehradun (Constituent College and Second Campus of G.K.V.) for admission to the following courses :

1. Alankar (B.A.) and Alankar Samanya (B.A.) T.D.C. Course.
2. M.A. Hindi, English, Sanskrit.

### GENERAL INFORMATION

1. Female candidates need not apply in Gurukula Kangri for Science subjects involving practicals. They may apply for regular admission or may appear privately for M.A. (All subjects except Yoga), M.Sc. Maths, Psychology and Ph.D. (M.A., M.Sc. all subjects except Yoga).
2. Female candidates desirous of taking admission as a regular student to M.A. and M.Sc. Maths., Psy. may send their admission form direct to the Principal, Kanya Mahavidyalaya (G.K.V.), Sati Kund, Kankhal, Hardwar.
3. Scholarships to M.A. Ved., Sanskrit & Philosophy students.
4. Reservation to SC/ST candidates as per Govt. of India rules.
5. Prescribed application form and prospectus may be obtained on cash payment of Rs. 40/- or by sending Bank Draft of Rs. 50/- (Payable to Registrar).

### Last date for receipt of application form (regular students)

B.Sc. Alankar - Samanya - B.A.	Without late fee	20/7/95
	With 200/- late fee	30/7/95
M.Sc.	Without late fee	20/8/95
	With 200/- late fee	31/8/95
Alankar - Vedalankar/Vidyalankar, M.A. and Diploma courses		31/8/95
Ph.D.		31/12/95

Jaldev Vedalankar  
REGISTRAR

# JAIN VISHVA BHARATI INSTITUTE

(Deemed University)

LADNUN-341 306

## ADMISSION NOTICE 1995-96

Applications are invited for admission in the following full-time two year Post-Graduate degree courses

**M.A./M.Sc. in Science of Living, Preksha Meditation & Yoga**

**Eligibility :** Science graduate or Bachelor in Arts with Psychology or Philosophy or Sociology or Education

**M.A. in Non-violence, Peace & Anuvrat**

**Eligibility :** Arts graduate with Philosophy or Sociology or Social Work or History or Political Science or Public Administration.

**M.A. in Jainology and Comparative Philosophy.**

**Eligibility :** Arts graduate with Philosophy or Sanskrit or Prakrit or Pali or proficiency in Jainism.

**M.A. in Prakrit Language and Literature.**

**Eligibility :** Arts graduate with Philosophy or Sanskrit or Prakrit or Pali. Working knowledge of Prakrit essential.

**Minimum 50% Marks** (45% for SC/ST/OBC) in graduation essential for all courses.

**Separate Hostel Accommodation** available for boys and girls. **Scholarship** each of Rs. 10,000/- per annum for the residents and Rs. 4000/- per annum for non-residents/locals to limited and selected candidates available.

Prospectus and Application Form can be obtained from the Registrar on payment of Rs. 50/- either by cash or DD, payable to Jain Vishva Bhareti Institute on Ladhun Branch of SBI/UCO Bank/SBBJ/OBC

Prospectus and Application Form can also be obtained on cash payment from Directorate of Distance Education, opposite Old Power House, Sunder Bilas Marg, Jaipur Road, **Ajmer**, CRB Capital Market, 207, Navjeevan Chamber, Vinoba Marg, C Scheme, **Jaipur**, Jain Vishva Bhareti, Anuvrat Bhawan, 210, Deendayal Upadhyaya Marg, **New Delhi**-100 002, Preksha Dhyana Academy, Harisidh Chambers, Ashram Road, **Ahmedabad**

**Last date** for receipt of applications is 18.7.95. Walk-in-interview for selection shall be held from 16.7.95 to 18.7.95 in the Institute at Ladhun Ph. (01581) 22116.



# Bharathidasan University

TIRUCHIRAPPALLI - 620 024.

Applications are invited from qualified candidates for the undermentioned posts in the DST sponsored project "Establishment of a Nonlinear Dynamics Unit at Bharathidasan University" under the guidance of Prof. M. Lakshmanan, Department of Physics, Bharathidasan University, Tiruchirappalli - 620 024 (T.N.). The project is for a period of 5 years. The facilities of the Unit will include e Iris Power Indigo2 XZ Supergraphics Workstation, equipments for carrying out nonlinear electronic circuit experiments and a good library of journals, books and reprint collections in Nonlinear Dynamics and Theoretical Physics. Provisions for Visiting Faculty and organization of Schools and Workshops in the subject also exist.

### POSITIONS AVAILABLE :

- |  |  |
|--|--|
| 1. <b>Senior Scientist (1)</b><br>Scale of Pay : Rs. 3700 - 125 - 4700 - 150 - 5000                  | 4. <b>Junior/Senior Research Fellow (NET qualified) :</b><br>JRF - Rs. 2500/-; SRF -Rs.2800/- plus H.R.A. & M.A. |
| 2. <b>Scientist (1)</b><br>Scale of Pay : Rs. 2200 - 75 - 2800 - 100 - 4000                          | For posts 1 & 2, other allowances including D.A., C.C.A., H.R.A. & M.A. are applicable as per University norms.  |
| 3. <b>Research Associate (1) in the lab</b><br>Rs. 4325 - 125 - 4700 - 150 - 5000 plus H.R.A. & M.A. |  |

Candidates for posts 1-3 should have proven ability of research in Nonlinear Dynamics or related topics in Theoretical / Mathematical Physics by way of sufficient research experience and published research works of impact, besides a Ph.D. degree. Candidates specialized in any area of Nonlinear Dynamics including integrable systems, chaotic dynamics (classical / quantum), condensed matter, statistical mechanics, theoretical biology, differential equations, and computational aspects are welcome to apply. Applications with full bio-data and two reference letters should reach Prof. M. Lakshmanan at the above address on or before July 15, 1995.

TIRUCHIRAPPALLI.

REGISTRAR



# CLASSIFIED ADVERTISEMENTS

## MARIAN COLLEGE KUTTIKANAM, PEERMADE (Aided College affiliated to M.G. University)

Applications are invited for one lecturer post each in the following subjects (Open and community merit)

1. Computer Application
2. Business Administration
3. Mathematics (Proficiency in Computer preferred)
4. Statistics (Proficiency in Computer preferred)
5. Commerce
6. English
7. Malayalam (part time)
8. Hindi (part time)

**Qualifications :** A postgraduate degree with a first class or a second class with not less than 55% of marks in the subject concerned and a pass in the UGC eligibility test for items 3 to 8 and a pass with first class or second class with not less than 55% marks in MCA or MTch (computer science or M.Sc. (computer science)) for item 1 and a pass with first class or a second class with not less than 55% of marks in MBA for item 2.

All appointments are subject to the approval of the University/Government.

Application forms can be had from the college office on payment of Rs. 150/- or by post by sending a money order of Rs. 160/- to the Manager, Marian College, Kuttikkanam P.O., Peermade - 685 531, Idukki District. Apply with one month from the date of this publication. Those who applied earlier have to submit fresh application this year.

8.5.1995

MANAGER

## AMRAVATI UNIVERSITY

### EMPLOYMENT NOTICE

No. AU/1/102/A-722/95

Date : 30/5/1995

Applications are invited in the prescribed form for a post of Registrar, Amravati University in the pay scale of Rs. 4500-150-5700-7300/- plus allowances as admissible under the University rules.

**Qualification :** An eminent scholar with published work of high quality, actively engaged in research with ten years of experience in Post-Graduate Teaching and/or research at the University/National level institutions, including experience of guiding research at Doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Knowledge of Marathi is essential.

**Age :** Unless already in the service of Universities or affiliated colleges are not less than 45 years of age.

**Tenure of appointment :** The appointment to the post of Registrar initially shall be for a period of five years which may be renewed for similar term.

**Age & Qualification** shall be considered on closing date.

Prescribed application form with details of qualifications etc. can be had on payment of Rs. 15/- (Rs. 7-50 for SC/ST/VJNT) (Non-refundable) by Cash/Bank Draft alongwith self addressed envelope (12"x5") upto 25th June 1995. For obtaining application form by post, the envelope bearing such requisition should indicate name of the post. The last date of receipt of application form alongwith Rs. 15/- (Rs. 7-50 in case of SC/ST/VJNT candidates) as application fee by Cash/Bank Draft in favour of Registrar, Amravati University, Amravati is 30th June, 95.

Canvassing direct or indirect will be disqualification.

REGISTRAR

## ANNA UNIVERSITY

MADRAS-600 025

### SC/ST TEACHERS TRAINING PROGRAMME

Advt. No. 001/PR24/95

Dated : 29.05.1995

Applications are invited in the prescribed form, from candidates belonging to SC/ST for recruitment as **TEACHER TRAINEES**.

**Qualification :** B.E./B.Tech./B.Arch. with First Class or CGPA greater than 6.5

**Stipend :** Rs. 2,000/- per month

**Age Limit :** Below 27 years as on 1.7.95

**Training Period :** 3 years

Sl No	Area of Training	Eligibility
1.	Industrial Engineering	B.E./B.Tech. (any branch)
2.	Computer Science and Engineering	B.E. (Computer Science and Engineering/Electrical and Electronics Engg./Electronics and Communication Engineering) B.Tech. (Electronics/Instrumentation)
3.	Architecture	B.Arch.
4.	Town & Country Planning	B.Arch./B.E. (Civil)

On successful completion of training and on acquiring Master's degree (part of training) with First Class or CGPA greater than 6.5, the trainees will be considered for direct appointment as Lecturer in the scale of pay of Rs. 2200-75-2800-100-4000.

Application forms and other details can be had on requisition accompanied by a Demand Draft for Rs. 50/- (Rupees Fifty only) dated not earlier than 1.6.95 drawn in favour of "Registrar, Anna University, Madras-25" together with a stamped self-addressed envelope (Rs. 5/-) of size 22 cm x 10 cm.

Last date for the receipt of completed application form is 30.6.95.

(NOTE : For each area of training, separate application is needed.)

REGISTRAR

**ANNA UNIVERSITY****MADRAS-600 025****Advertisement No. 001/PR-14/****Recruitment/95****Dated 26.5.1995**

Applications in the prescribed form are invited from :

i) SC/ST candidates

ii) General candidates

for the posts listed in the next para. The SC/ST candidates who are suitable will be considered first to the extent of their entitlement. Application form, details of prescribed qualification/field of specialization and other particulars can be had from the Registrar, Anna University, Madras-600 025 on request accompanied by a Demand Draft for Rs. 50/- (Rupees Fifty only) dated not earlier than 30.5.95 drawn in favour of the Registrar, Anna University, Madras-600 025 together with a stamped self-addressed envelope (Rs 5/-) of size 22 x 10 cm.

**Details of posts :**

1. **Professors** : Mechanical Engineering (Temp) (Energy Engineering/Thermal

Energy); Computer Science & Engineering; Ceramic Technology (Temp); English (Temp); MECHATRONICS.

2. **Assistant Professors** : Civil Engineering (Remote Sensing/Photogrammetry); Mechanical Engineering (Temp) (Energy Engineering/Thermal Energy/Engineering Design/Production Engineering); Industrial Engineering; Electrical & Electronics Engineering (Temp); Electronics & Communication Engineering (Temp); Biotechnology (Engineering Stream/Science Stream); Instrumentation; Rubber Technology (Temp) (Polymer Technology); English, Geology; Industrial Management (Temp).

3. **Lecturers** : Civil Engineering (Remote Sensing/Photogrammetry); Electrical & Electronics Engineering (Temp); Electronics & Communication Engineering (Temp); Computer Science & Engineering (Temp); Ceramic Technology (Temp); Aeronautical Engineering (Avionics System); Instrumentation (Temp); Electronics (Temp); Production (Temp) (Production/Design/Industrial Engineering); Rubber Technology (Temp) (Polymer Technol-

ogy); Mathematics; Crystal Growth (Temp); Industrial Management (Temp); Systems Programming (for Ramanujan Computing Centre) (Temp).

4. **Co-ordinator for Centre for University-Industry Collaboration** (Assistant Professor Cadre).

**Scale of pay :**

Professor : Rs. 4500-150-5700-200-7300.

Assistant Professor : Rs. 3700-125-4950-150-5700.

Lecturer : Rs. 2200-75-2800-100-4000

Last date for receipt of completed application is 30.6.95.

**Note** : 1. "Candidates may also be considered for lower level posts if not found suitable for the post applied for depending upon the suitability and availability of vacancies "

2. Temp' indicates that the concerned post is temporary for one year, but likely to continue.

**REGISTRAR****GAUHATI UNIVERSITY****GUWAHATI - 781014****PERSONNEL DEPARTMENT (ESTABLISHMENT BRANCH)****ADVERTISEMENT NO. T/95/1**

Applications in the prescribed forms are invited for the following teaching posts

Applicants will have to obtain the prescribed application forms on payment of Rs. 15/- (Rupees fifteen) in the University Cash Counter or on requisition accompanied with a Crossed Demand Draft of Rs. 15/- (SBI) drawn in favour of the Registrar, Gauhati University, Guwahati-14 from the office of the undersigned (Establishment branch) on or before 30.6.95 during office hours.

The duly filled up application along with an application fee of Rs. 20/- (Rs. 10/- in case of SC/ST candidates) to be paid in the manner indicated above will be received upto 31.7.95.

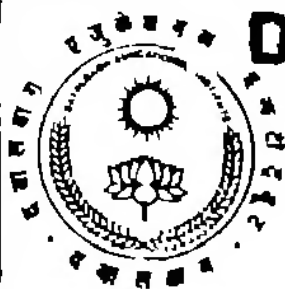
Persons in employment should apply through proper channel or furnish 'No Objection Certificate' from their employer.

Name of posts	No. of posts		Specialization
1. Professor of Biotechnology	1	Open	E.Q. : Master degree in Biochemical Engineering, Ph.D. in related fields.
2. Professor of Physics	1	Open	
3. Professor of Education	2	Open	
4. Professor of Folklore Research	1	Open	Knowledge of Folk literature of Assam and tribal culture is desirable.
5. Professor of Hindi	2	i) Open	Preferably good knowledge of comparative study of Assamese literature and culture.
		ii) Open	
6. Professor of History	1	Open	Knowledge of Western History desirable.
7. Professor of Pol. Science	1	Open	Knowledge of Government and politics in North East India desirable.
8. Professor of Philosophy	1	Open	
9. Professor of Sanskrit	2	Open	
10. Professor of Environmental Science	1	Open	
11. Professor of Anthropology	1	Open	Master's degree with knowledge of Physical Anthropology. Physical Anthropological research among the peoples of North East India.
12. Reader in Biotechnology	3		i) Master Degree in Biotechnology or Molecular Biology, Ph.D. in related fields. Master's Degree in Botany with Ph.D. in Molecular Biology may also be considered. Experience in Animal Biotechnology desirable

- ii) Master's degree and Ph.D. in Biochemistry. Experience in Protein and nucleic acid Biochemistry is desirable.
- iii) Master's degree and Ph.D. in Biotechnology/Microbiology. Experience in Plant Biotechnology/Microbial Technology is desirable.

13. Reader in Chemistry (Against Lien vacancy)	1		Physical
14. Reader in Electronics Science	1	Open	E.Q. : M.E/M.Tech in Electronics, or M.Sc. (Electronics Science), or M.Sc. (Physics) having specialization in Electronics or Solid State Physics.
15. Reader in Geological Sciences	1		Precambrian Geology and Structural Geology.
16. Reader in Physics	1		M.Sc. in physics with Radio physics and Electronics as special paper, and Ph.D. in Associated field or equivalent research publication and teaching experience.
17. Reader in Foreign Language	1		French
18. Reader in History	1		Ancient Indian History.
19. Reader in Linguistics	1		Master's degree in Linguistics. Specialisation in Assamese and/or Tibeto Barman Linguistics.
20. Reader in Statistics	1	Open	
21. Reader in USIC	1		M.Sc. in Physics or M.Tech in Engineering or in Instrumentation with Ph.D. in works related to Electronics or Instrumentation, or evidence of equivalent research work. Minimum five years' experience in teaching electronics or instrumentation or experience in designing, repairing or operating sophisticated analytical Instruments and flair for R & D in instrumentation.
22. Lecturer in Biotechnology	3		i) Specialisation and/or experience in Industrial Microbiology/Industrial Biotechnology. ii) Specialisation and/or experience in molecular biology or genetic engineering. iii) Specialisation and/or experience in Biophysics/Computer Science
23. Lecturer in Geological Sciences	3		i) Igneous petrology and Minerology. ii) Sedimentary petrology, Stratigraphy and computer application. iii) Engineering Geology/Geochemistry/ Geomorphology.
24. Lecturer in Physics	3		i) Nuclear Physics. ii) Solid State Physics/Electronic & Radiophysics. iii) Spectroscopy
25. Lecturer in Statistics	1	Open	E.Q.: Having ability to teach distribution theory/Econometrics/Operation Research
26. Lecturer in English	1	Open	
27. Lecturer in English Language teaching	1		M.A. in English with Diploma/Degree in English Language teaching.
28. Lecturer in Education	1	Open	
29. Lecturer in Foreign Language	1		Russian
30. Lecturer in Folklore Research	1		E.Q.: M.A degree in Folklore or any discipline in Social Science and Humanities streams with academic attainment in Folklore. Back ground of Museum methods or Linguistics as related to folklore is desirable.
31. Lecturer in Hindi	1		Preferably Modern Poetry.
32. Lecturer in Journalism	1		Bachelor or Master's degree in Journalism and communication.
33. Lecturer in History	3		i) Ancient Indian History. ii) Open. Capable of teaching East Indian History. iii) Capable of teaching concepts and Methods of History.
34. Lecturer in Library & Information Science	1		Master's degree in Lib. Science. Preference to those candidates having exposure to computer application in Library & Information service.
35. Lecturer in Persian	2	Open	
36. Lecturer in Pol. Science	1	Open	
37. Lecturer in Bengali	1		M.A. in Linguistics with M.A. in Bengali Major in Bengali at Bachelor's degree level OR M.A. in Linguistics with M.A. in Sanskrit and capable of teaching Bengali literature as well.
38. Lecturer in Psychology	1		M.A./M.Sc. in Psychology. E.Q.: M.Com.
39. Lecturer in Commerce	1		Finance Group : Major/Honours in Banking at Degree preferred.
40. Lecturer in Business Administration	1		M.B.A. with financial management.
41. Reader in Psychology	1		Psychometry/Clinical.

Dr. K.C. Deka  
REGISTRAR



# DAYALBAGH EDUCATIONAL INSTITUTE

(Deemed University), Dayalbagh, Agra-282 005

## ADMISSION NOTICE 1995-96

Applications are invited for admission to the following courses

S.No.	Courses	Eligibility
1.	<b>B.A., B.Com., B.Sc.</b> (4 Sems.) Hons. 6-Sems	Intermediate or equivalent with concerned subject
2.	<b>B.B.M.</b> (4-Sems.) Hons. 6-Sems	Intermediate with Arts/Com /Sc or equivalent.
3.	<b>B.Sc. (Engg.)</b> (8 Sems.) (Mechanical/Electrical)	Intermediate or equivalent with at least 60% in the aggregate of PCM as well as in Mathematics. Relaxation of 5% for SC/ST applicants.
4.	<b>B.Ed.</b> (2 Sems )	Graduate*/Post graduate in Arts, Science or Commerce with at least 50% in aggregate.
5.	<b>M.Ed.</b> (2 Sems )	B Ed. or equivalent with at least 50% in all the public examinations
6.	<b>M.A.</b> (Drawing & Ptg./English/Hindi/Home Science/ Music - with specialisation in Vocal, Sitar or Tabla/ Psychology/Sanskrit (4 Terms-3 semesters plus a summer term.)	Graduate* with honours in the subject concerned except for Drawing & Ptg. Music which requires graduate* with the concerned subject
7.	<b>M.Com.</b> (4 Terms-3 Semesters plus a summer term)	Graduate* with honours in Commerce
8.	<b>M.Sc.</b> (Botany/Chem./Maths/Physics/Zoology) (4 Terms-3 Semesters plus a summer term)	Graduate* with honours in a single subject concerned
9.	<b>M.B.M.</b> (Master in Business Mgmt) (4 Terms-3 Semesters plus a summer term)	Graduate in any discipline (in case of graduates of Arts/Commerce/Science, 3 year degree course.)
10.	<b>M.Tech</b> in Engineering Systems (Full-time 4 terms-3 semesters plus a summer term)	Bachelor Degree in Computer Science & Engineering, Electrical, Electronics & Communication, Mechanical or Production and Industrial Engineering.
11.	<b>M.Tech</b> in Engineering Systems & Management (Part-time 5 Semesters)	
12.	<b>PGDCSA</b> (PG Diploma in Computer Science & Applications) (2 Semesters)	Graduate* with Mathematics as main (major) subject or Post-graduate with Mathematics as main (major) subject at degree level or Engineering graduate.
13.	<b>PGDTDP</b> (PG Diploma in Textile Designing & Printing) (2 Semesters)	Graduate* in any discipline.
14.	<b>Ph.D.</b> in all post-graduate subjects	Post-graduate with at least 55% marks in the concerned subject or an Engineering graduate with at least 75% marks
15.	<b>Engineering Diploma</b> (Automobile/Elect/Mech.) (6 sems )	Intermediate with at least II division or its equivalent with Hindi, English, Physics, Chemistry & Mathematics.

\*3 year degree course under 10+2+3 system.

Max age 21 years (24 for SC/ST) as on 1st July 1995, except for female applicants and those for B.Ed /PG Courses\*, max age for Engg Diploma-22 years (25 for SC/ST)

- Admissions are made on the basis of academic merit, written test and personal interview. At present, admission to M.A, M.Com, M.Sc. and M.Tech. are made on the basis of academic merit and personal interview only.
- Written test is not an entrance examination open to all candidates who apply, but it is a part of selection procedure. Only a limited number of candidates will be called for written test on the basis of marks obtained in various pre-qualifying and/or qualifying examinations.
- For the present, B.A., B.B.M., B.Com., B.Sc., B.Ed., M.A., M.Com., MBM, M.Sc., M.Ed., PGDCSA, PGDTDP and Ph.D. Courses in the Faculties of Arts, Commerce, Education, Science and Social Sciences will be open for admission to female candidates
- For the present, B.B.M., B.Com., B.Sc., B.Ed., Engg. Diploma, B.Sc. (Engg.), M.Com., M.Tech., PGDCSA, MBM, M.Ed. and Ph.D. Courses in the Faculties of Commerce, Education, Engineering, Science and Social Sciences will be open for admission to male candidates

Prospectus containing details of courses etc. along with application form and syllabus for courses where written test is prescribed can be obtained from the Institute's counter or by post by sending bank draft in favour of **DAYAL BAGH EDUCATIONAL INSTITUTE**, payable on any bank at **AGRA** alongwith an address chit of 8 x 4 cms. size as follows

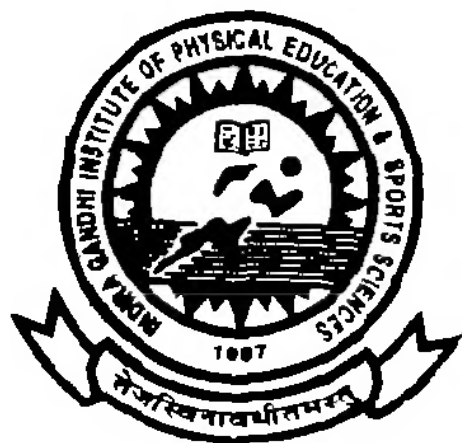
- Prospectus for courses at S.Nos. 1 to 14. Rs. 50/- at counter, Rs. 60/- by bank draft, by post.
- Syllabus for written test (except for M.A., M.Com., M.Sc. and M.Tech.). Rs. 5/- at counter, Rs. 15/- by post (bank draft for Rs. 65/- may also be sent towards combined cost of prospectus and syllabus by post.)
- Prospectus alongwith syllabus for written test for course No. 15. Rs. 40/- at counter, Rs. 50/- by bank draft, by post

Except for Ph.D. completed applications must reach the Registrar up to **30th June 1995**. In case of B.A., B.B.M., B.Sc. (Engg.) or Engg. Diploma, the last date will be 10th day after declaration of result of Intermediate Examination of the U.P. Board for regular candidates.

30 May, 1995

REGISTRAR





# INDIRA GANDHI INSTITUTE OF PHYSICAL EDUCATION & SPORTS SCIENCES

(University of Delhi)

B-Block, Vikas Puri, New Delhi-110 018

## ADMISSION NOTICE - 1995

Applications are invited for admission to:

- (A) B.Sc. Physical Education, Health Education and Sports (P.E.H.E.S.) 3 Years Degree  
Eligibility : 10+2 or equivalent Qualification
- (B) Master of Physical Education & Sports (MPES) 2 Years Eligibility : B.Sc. (P.E.H.E.S.)/  
B.P.E./B.Sc./B.A./B.Com.)
- (C) Post Graduate Diploma in Physical Education (P.G.D.P.Ed.) 1 Year Eligibility : Gradu-  
ation

## UNIQUE CAREER OPPORTUNITIES

(After 10+2 Onwards)

Make use of India's best sports science laboratories and Highly qualified staff to accomplish your dream career through job oriented education to become :

- Supervisor/Counsellor/ Sports Officer in various Govt., Semi Govt., and Pvt. Organisations such as Five Star Hotels, Railways, Air India, Tatas etc.
- Director of Physical Education or University/College/School Teacher.
- Sports Journalist, Sports Physiotherapist, Sports Manager.
- Specialist in Sports Coaching & selection.
- Qualified Health Club Practitioner.
- Physical Fitness Expert/Director.
- Stadia Manager/Administrator.
- Distinguished Sports Scientist.

**70% Teachers  
having Ph.D. degree  
20% Teachers  
experienced abroad.**

Last Date for submission of completed application form for :

- (i) B.Sc. (Physical Education, Health Education and Sports) is June 23rd, 1995.
- (ii) Post Graduate diploma in Physical Education and Master of Physical Education & Sports is July 4th, 1995.

For more details, the prospectus along with application form can be collected from Office of the Institute from June 5, 1995 on all working days on cash payment of Rs. 40/- or by post by sending a Bank Draft for Rs. 50/- in favour of the Principal, IGIPES payable at New Delhi along with your complete postal address.

**DR. D. K. KANSAL (PRINCIPAL)**